

6. SYSTEMATIC papers must conform to the *International code of zoological nomenclature* (particularly Articles 22 and 51).

Names of new taxa, combinations, synonyms, etc., when used for the first time, must be followed by the appropriate Latin (not English) abbreviation, e.g. gen. nov., sp. nov., comb. nov., syn. nov., etc.

An author's name when cited must follow the name of the taxon without intervening punctuation and not be abbreviated; if the year is added, a comma must separate author's name and year. The author's name (and date, if cited) must be placed in parentheses if a species or subspecies is transferred from its original genus. The name of a subsequent user of a scientific name must be separated from the scientific name by a colon.

Synonymy arrangement should be according to chronology of names, i.e. all published scientific names by which the species previously has been designated are listed in chronological order, with all references to that name following in chronological order, e.g.:

Family Nuculanidae

Nuculana (Lembulus) bicuspidata (Gould, 1845)

Figs 14–15A

Nucula (Leda) bicuspidata Gould, 1845: 37.

Leda plicifera A. Adams, 1856: 50.

Laeda bicuspidata Hanley, 1859: 118, pl. 228 (fig. 73). Sowerby, 1871: pl. 2 (fig. 8a–b).

Nucula largillierii Philippi, 1861: 87.

Leda bicuspidata: Nickles, 1950: 163, fig. 301; 1955: 110. Barnard, 1964: 234, figs 8–9.

Note punctuation in the above example:

comma separates author's name and year

semicolon separates more than one reference by the same author

full stop separates references by different authors

figures of plates are enclosed in parentheses to distinguish them from text-figures

dash, not comma, separates consecutive numbers

Synonymy arrangement according to chronology of bibliographic references, whereby the year is placed in front of each entry, and the synonym repeated in full for each entry, is not acceptable.

In describing new species, one specimen must be designated as the holotype; other specimens mentioned in the original description are to be designated paratypes; additional material not regarded as paratypes should be listed separately. The complete data (registration number, depository, description of specimen, locality, collector, date) of the holotype and paratypes must be recorded, e.g.:

Holotype

SAM-A13535 in the South African Museum, Cape Town. Adult female from mid-tide region, King's Beach Port Elizabeth (33°51'S 25°39'E), collected by A. Smith, 15 January 1973.

Note standard form of writing South African Museum registration numbers and date.

7. SPECIAL HOUSE RULES

Capital initial letters

- (a) The Figures, Maps and Tables of the paper when referred to in the text
e.g. '... the Figure depicting *C. namacolus* ...'; '... in *C. namacolus* (Fig. 10) ...'
- (b) The prefixes of prefixed surnames in all languages, when used in the text, if not preceded by initials or full names
e.g. Du Toit but A. L. du Toit; Von Huene but F. von Huene
- (c) Scientific names, but not their vernacular derivatives
e.g. Therocephalia, but therocephalian

Punctuation should be loose, omitting all not strictly necessary

Reference to the author should be expressed in the third person

Roman numerals should be converted to arabic, except when forming part of the title of a book or article, such as

'Revision of the Crustacea. Part VIII. The Amphipoda.'

Specific name must not stand alone, but be preceded by the generic name or its abbreviation to initial capital letter, provided the same generic name is used consecutively.

Name of new genus or species is not to be included in the title: it should be included in the abstract, counter to Recommendation 23 of the Code, to meet the requirements of Biological Abstracts.

R. V. DINGLE

MID-CRETACEOUS OSTRACODA
FROM SOUTHERN AFRICA AND
THE FALKLAND PLATEAU

QH

1

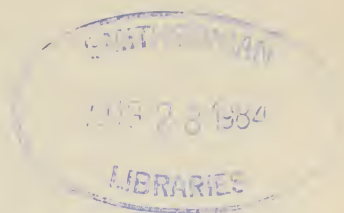
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ANNALS

OF THE SOUTH AFRICAN
MUSEUM

CAPE TOWN



INSTRUCTIONS TO AUTHORS

1. MATERIAL should be original and not published elsewhere, in whole or in part.

2. LAYOUT should be as follows:

- (a) *Centred masthead to consist of*
 Title: informative but concise, without abbreviations and not including the names of new genera or species
 Author's(s') name(s)
 Address(es) of author(s) (institution where work was carried out)
 Number of illustrations (figures, enumerated maps and tables, in this order)
- (b) *Abstract* of not more than 200 words, intelligible to the reader without reference to the text
- (c) *Table of contents* giving hierarchy of headings and subheadings
- (d) *Introduction*
- (e) *Subject-matter* of the paper, divided into sections to correspond with those given in table of contents
- (f) *Summary*, if paper is lengthy
- (g) *Acknowledgements*
- (h) *References*
- (i) *Abbreviations*, where these are numerous

3. MANUSCRIPT, to be submitted in triplicate, should be typewritten and neat, double spaced with 2.5 cm margins all round. First lines of paragraphs should be indented. Tables and a list of legends for illustrations should be typed separately, their positions indicated in the text. All pages should be numbered consecutively.

Major headings of the paper are centred capitals; first subheadings are shouldered small capitals; second subheadings are shouldered italics; third subheadings are indented, shouldered italics. Further subdivisions should be avoided, as also enumeration (never roman numerals) of headings and abbreviations.

Footnotes should be avoided unless they are short and essential.

Only generic and specific names should be underlined to indicate italics; all other marking up should be left to editor and publisher.

4. ILLUSTRATIONS should be reducible to a size not exceeding 12×18 cm (19 cm including legend); the reduction or enlargement required should be indicated; originals larger than 35×47 cm should not be submitted; photographs should be rectangular in shape and final size. A metric scale should appear with all illustrations, otherwise magnification or reduction should be given in the legend; if the latter, then the final reduction or enlargement should be taken into consideration.

All illustrations, whether line drawings or photographs, should be termed figures (plates are not printed; half-tones will appear in their proper place in the text) and numbered in a single series. Items of composite figures should be designated by capital letters; lettering of figures is not set in type and should be in lower-case letters.

The number of the figure should be lightly marked in pencil on the back of each illustration.

5. REFERENCES cited in text and synonymies should all be included in the list at the end of the paper, using the Harvard System (*ibid.*, *idem*, *loc. cit.*, *op. cit.* are not acceptable):

(a) Author's name and year of publication given in text, e.g.:

- 'Smith (1969) describes ...'
- 'Smith (1969: 36, fig. 16) describes ...'
- 'As described (Smith 1969a, 1969b; Jones 1971)'
- 'As described (Haughton & Broom 1927) ...'
- 'As described (Haughton *et al.* 1927) ...'

Note: no comma separating name and year
 pagination indicated by colon, not p.
 names of joint authors connected by ampersand
et al. in text for more than two joint authors, but names of all authors given in list of references.

(b) Full references at the end of the paper, arranged alphabetically by names, chronologically within each name, with suffixes *a*, *b*, etc. to the year for more than one paper by the same author in that year, e.g. Smith (1969a, 1969b) and not Smith (1969, 1969a).

For books give title in italics, edition, volume number, place of publication, publisher.

For journal article give title of article, title of journal in italics (abbreviated according to the *World list of scientific periodicals*, 4th ed. London: Butterworths, 1963), series in parentheses, volume number, part number (only if independently paged) in parentheses, pagination (first and last pages of article).

Examples (note capitalization and punctuation)

- BULLOUGH, W. S. 1960. *Practical invertebrate anatomy*. 2nd ed. London: Macmillan.
- FISCHER, P.-H. 1948. Données sur la résistance et de le vitalité des mollusques. *J. Conch.*, Paris 88: 100-140.
- FISCHER, P.-H., DUVAL, M. & RAFFY, A. 1933. Études sur les échanges respiratoires des littorines. *Archs Zool. exp. gén.* 74: 627-634.
- KOHN, A. J. 1960a. Ecological notes on *Conus* (Mollusca: Gastropoda) in the Trincomalee region of Ceylon. *Ann. Mag. nat. Hist.* (13) 2: 309-320.
- KOHN, A. J. 1960b. Spawning behaviour, egg masses and larval development in *Conus* from the Indian Ocean. *Bull. Bingham oceanogr. Coll.* 17 (4): 1-51.
- THIELE, J. 1910. Mollusca: B. Polyplacophora, Gastropoda marina, Bivalvia. In: SCHULTZE, L. *Zoologische und anthropologische Ergebnisse einer Forschungsreise im westlichen und zentralen Süd-Afrika* 4: 269-270. Jena: Fischer. *Denkschr. med.-naturw. Ges. Jena* 16: 269-270.

(continued inside back cover)

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THE SOUTH AFRICAN MUSEUM'S
MEIRING NAUDE CRUISES
PART 15
MARINE ISOPODA
OF THE 1977, 1978, 1979 CRUISES

By
BRIAN KENSLEY

Cape Town Kaapstad

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THE SOUTH AFRICAN MUSEUM'S MEIRING NAUDE CRUISES

PART 15

MARINE ISOPODA OF THE 1977, 1978, 1979 CRUISES

By

BRIAN KENSLEY

Smithsonian Institution, Washington, D.C.

(With 43 figures and 1 table)

[MS accepted 25 August 1983]

ABSTRACT

Fifty-one species (excluding the Anthuridea) collected off the east coast of South Africa are recorded. Two new genera, *Agularcturus* (Arcturidae) and *Natalianira* (Janiridae) and the following new species are described: *Agularcturus granulatus*, *Antarcturus bicornis*, *Astacilla eminentia*, *Microarcturus barnardi*, *M. haley*, *M. longispinus*, *M. nordenstami*, *Cirolana bougaardti*, *C. convexissima*, *Paracilicæa cordylina*, *Stenetrium perestrelloi*, *Ianiseria expansa*, *Natalianira spinosa*, *Joeropsis integer*, *J. serrulus*, *Notoxenoides acalama*, *Haplomesus zuluensis*, *Ischnomesus glabra*, *Stylomesus natalensis*. The new name, *Cirolana anocula*, is provided for *C. caeca* Kensley, 1978, *non* Dollfus, found to be a homonym of a previously described Mediterranean species.

A brief discussion of the distribution and zoogeography of the isopods of all five cruises indicates the presence of a large endemic isopod fauna on the continental shelf and/or slope of the east coast of South Africa.

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INTRODUCTION

The present paper deals with most of the isopod material collected by the South African Museum's *Meiring Naude* cruises of 1977, 1978, and 1979. The isopod material from the first two cruises has already been dealt with in several

publications (the Anthuridea (Kensley 1978c) and infraorders excluding the Anthuridea (Kensley 1978a)). Several shorter papers dealing with discreet taxa have also appeared (Kensley 1978b, 1978d, 1979). The Anthuridea of the three later cruises have been included in a revision of the southern African fauna (Kensley 1982). A brief discussion of the distributional information of all the cruises is given at page 298. A review of all the southern African species of *Microarcturus* (including those not collected during the *Meiring Naude* cruises) is included in an attempt to clarify the complicated taxonomy of this genus. Because of the confusion over names in the genus *Astacilla*, figures and a brief description of one Mediterranean species is included.

Station data for the 1975 and 1976 cruises may be found in Louw (1977), and for the 1977–9 cruises in Louw (1980).

SPECIES LIST FOR THE 1977–9 CRUISES (EXCLUDING ANTHURIDEA)

Material not identified to specific level is either damaged or immature.

	SM station no.	♂	♀	ovig. ♀	juv.
INFRAORDER VALVIFERA					
Family Arcturidae					
* <i>Agularcturus granulatus</i> sp. nov.	163	3	—	2	3
	179	—	—	1	—
	185	1	—	—	—
* <i>Antarcturus bicornis</i> sp. nov.	226	—	—	—	1
	232	4	—	—	2
<i>Antarcturus kladophorus</i> Stebbing	185	1	—	—	—
<i>Arcturina hexagonalis</i> Barnard	180	—	3	3	—
<i>Arcturina scutula</i> Kensley	164	1	—	—	—
	179	—	—	1	—
	180	1	—	2	—
<i>Arcturinoidea sexpes</i> Kensley	163/4	17	10	18	—
	179	1	1	—	—
	180	5	1	7	—
	185	24	20	53	4
<i>Astacilla corniger</i> (Stebbing)	185	1	1	1	5
* <i>Astacilla eminentia</i> sp. nov.	103	1	—	—	3
	109	1	—	—	—
	226	2	—	—	—
	232	2	2	—	—
	250	2	—	—	—
<i>Astacilla longispina</i> (Kensley)	250	1	1	—	—
<i>Astacilla tranquilla</i> (Kensley)	163/4	2	—	—	1
	179	1	—	—	—
	185	2	—	—	—
<i>Austroarcturus africana</i> Kensley	163	3	—	2	4
	179	3	—	2	2
	180	21	14	15	12
	185	8	4	10	2

* = new record

	SM station no.	♂	♀	ovig. ♀	juv.
<i>Austroarcturus foveolatus</i> Kensley	163/4	—	—	1	—
	180	1	1	—	1
	185	8	4	2	13
* <i>Microarcturus barnardi</i> sp. nov.	163	10	—	4	12
<i>Microarcturus dayi</i> Kensley	179	1	—	—	—
	180	6	—	1	4
* <i>Microarcturus halei</i> sp. nov.	103	11	—	5	—
	109	—	—	1	—
	123	2	—	2	—
	226	11	—	6	20
	232	14	—	4	4
	250	6	—	6	17
* <i>Microarcturus longispinus</i> sp. nov.	226	—	—	1	—
	228	1	—	—	—
	250	2	—	1	1
* <i>Microarcturus nordenstami</i> sp. nov.	163	—	—	1	—
	185	13	4	13	9
	226	1	—	—	—
<i>Microarcturus ornatus</i> Kensley	228	5	—	—	—
	236	1	—	—	—
	250	6	—	—	—
<i>Microarcturus oudops</i> (Barnard)	103	2	—	4	4
	129	4	—	2	1
	226	7	—	6	—
	228	5	—	1	—
	236	1	—	—	1
<i>Microarcturus quadriconus</i> Kensley	179	2	—	5	—
	180	8	1	12	22
<i>Microarcturus youngi</i> Kensley	123	1	—	—	—
	129	3	—	—	2
	226	4	—	2	1
	232	14	1	4	—
<i>Spinarcturus natalensis</i> Kensley	123	1	—	—	—
	129	1	2	—	—
	226	—	—	—	1
	250	—	1	—	1
Family Idoteidae					
<i>Idotea metallica</i> Bosc	54	1	—	—	—
	160	—	1	—	—
	170	—	—	1	—
INFRAORDER FLABELLIFERA					
Family Cirolanidae					
<i>Cirolana anocula</i> nom. nov.	123	—	3	2	3
	129	5	3	5	6
* <i>Cirolana bougaardti</i> sp. nov.	162	1	—	—	—
	226	1	—	—	—
* <i>Cirolana convexissima</i> sp. nov.	250	2	—	2	7
<i>Cirolana theleceps</i> Barnard	163	—	1	—	—
	179	—	2	—	—
	185	—	2	—	—
<i>Cirolana virilis</i> Barnard	250	—	1	—	—
<i>Conilorphus scutifrons</i> Stebbing	185	—	1	—	—
Family Aegidae					
<i>Syscenus infelix</i> Harger	119	1	—	—	—

* = new record

	SM station no.	♂	♀	ovig. ♀	juv.
Family Sphaeromatidae					
<i>Cymodoce alia</i> Kensley	250	1	1	—	1
<i>Cymodoce tuberculosa</i> Richardson	163	5	—	—	—
<i>Cymodoce velutina</i> Kensley	185	1	1	—	1
	250	—	—	—	1
* <i>Paracilicæa cordylina</i> sp. nov.	15	1	—	—	—
INFRAORDER GNATHIIDAE					
Family Gnathiidae					
<i>Gnathia africana</i> Barnard	179	1	—	—	—
	185	33	7	—	—
<i>Gnathia cryptopais</i> Barnard	226	2	—	—	—
	228	1	—	—	—
	232	2	—	—	—
<i>Gnathia spongicola</i> Barnard	86	3	—	—	—
(<i>in situ</i> , in sponge <i>Tylodesma</i> sp.)					
INFRAORDER ASELOTA					
Family Stenetriidae					
<i>Stenetrium abyssale</i> Wolff	165	1	—	—	—
	226	—	1	—	—
<i>Stenetrium crassimanus</i> Barnard	250	—	2	—	—
<i>Stenetrium dagama</i> Barnard	123	1	1	—	—
	129	1	2	1	—
	151	—	1	—	—
	185	—	1	—	—
	226	2	—	—	—
	232	1	—	—	—
<i>Stenetrium diazi</i> Barnard	250	3	—	—	4
* <i>Stenetrium perestrelloi</i> sp. nov.	163/4	2	1	1	18
<i>Stenetrium saldanha</i> Barnard	185	1	—	—	—
Family Janiridae					
* <i>Ianisera expansa</i> sp. nov.	86	—	2	1	—
	103	—	4	—	—
	123	2	2	—	—
	129	4	3	4	—
	185	—	1	—	3
	226	3	2	1	—
* <i>Natalianira spinosa</i> sp. nov.	86	1	—	—	—
	103	1	—	—	—
	123	1	—	—	—
	129	1	—	1	—
<i>Paracanthaspidia natalensis</i> Kensley	123	1	—	—	—
	226	—	1	—	—
	228	—	1	1	—
<i>Spinianirella walfishensis</i> Menzies	129	2	6	1	1
	162	—	1	—	—
	226	1	—	—	—
	236	1	—	—	—
	250	—	1	—	—
Family Joeropsidae					
* <i>Joeropsis integer</i> sp. nov.	163	—	2	1	—
* <i>Joeropsis serrulus</i> sp. nov.	163/4	—	1	1	—
	185	—	—	1	—

* = new record

	SM station no.	♂	♀	ovig. ♀	juv.
Family Munnidae					
<i>Munna</i> sp.	123	1	—	—	—
	129	—	1	—	—
	250	1	—	—	2
Family Pleurogoniidae					
* <i>Notoxenoides acalama</i> sp. nov.	117	—	—	1	—
Family Haploniscidae					
<i>Haploniscus gernekei</i> Kensley	117	—	1	—	—
	123	3	1	1	—
	129	3	3	3	—
	228	—	1	—	—
	236	—	1	—	—
Family Eurycopidae					
<i>Eurycope glabra</i> Kensley	129	2	3	2	—
Family Ilyarachnidae					
<i>Ilyarachna wolffi</i> Kensley	250	2	—	1	—
Family Ischnomesidae					
* <i>Haplomesus zuluensis</i> sp. nov.	60	—	—	2	—
* <i>Ischnomesus glabra</i> sp. nov.	247	—	1	—	—
* <i>Stylomesus natalensis</i> sp. nov.	117	—	2	—	1
	123	—	2	—	—
	129	3	1	1	—

SYSTEMATIC DISCUSSION

INFRAORDER VALVIFERA

Family **Arcturidae***Agularcturus* gen. nov.*Diagnosis*

Head and pereonite 1 fused. Eyes dorsolateral. Antennal flagellum of two articles, ending in short claw. Pereopod 1, dactylus lacking terminal claw or spine. Pereopods 2–4 lacking dactyli. Pereonite 4 elongate, broad in female, cylindrical in male. Pleon consisting of one fused pleonite plus pleotelson. Exopod of pleopod 1 in male with notch at midlength and three specialized spines. Copulatory stylet of pleopod 2 male elongate-slender, apically bifid.

Type species

Agularcturus granulatus sp. nov.

Etymology

The name is derived from the Agulhas Current, which dominates the hydrology of the east coast of South Africa, plus the suffix 'arcturus' frequently used for members of this family.

* = new record

Remarks

Agularcturus falls into the group of genera possessing a notched exopod of pleopod 1 male, i.e. *Arcturina*, *Astacilla*, *Neastacilla*, *Arcturinoides*, *Arcturella*, and *Spinarcturus*. The absence of a claw on the dactylus of pereopod 1 distinguishes it from *Astacilla*, while the lack of dactyli on pereopods 2–4 separates it from *Neastacilla*. The single fused pleonite in the pleon separates it from the rest of the group, as does the apically bifid copulatory stylet.

Agularcturus granulatus sp. nov.

Figs 1–2

Material

East London area. Holotype SAM–A15666, SM 179, 33°30'S 27°22'E, 80 m, 1 ovig. ♀, TL 9,1 mm. Allotype SAM–A15667, SM 163, 33°04'S 28°06'E, 90 m, 1 ♂, TL 7,9 mm. Paratype SAM–A15668, SM 185, 33°39'S 27°11'E, 90 m, 1 ♂, TL 5,5 mm. Paratypes SAM–A15669, SM 163, 90 m, 1 ovig. ♀, TL 8,0 mm, 1 ♂, TL 5,5 mm, 3 juvs. Paratypes USNM 189066, SM 163, 90 m, 1 ♂, TL 8,6 mm, 1 ovig. ♀, TL 7,5 mm.

*Description**Female*

Dorsolateral integument densely granulate, indurate, with fairly dense pile of fine, short setules. Head with two pairs of submedian, roughly conical tubercles, posterior pair longer; anterior margin deeply concave, anterolateral corners subacute. Eyes well pigmented, triangular. Head and pereonite 1 fused, line of fusion indicated by dorsolateral groove and ventrolateral slit; well-developed ventrolateral rim concealing buccal cavity and pereopod 1 in lateral view. Pereonite 1 with large median conical tubercle; epimeron barely marked. Pereonites 2–3 subequal, each with blunt middorsal tubercle; epimera short, with straight lateral margin. Pereonite 4 broader anteriorly than long, with slight posterior taper; lateral margin a broad rounded ridge; cluster of three dorsal tubercle clumps in anterior half; distinct hollow near posterolateral corner; strong submedian pair of backwardly directed spine-like tubercles on posterior margin. Pereonites 5–6 decreasing in length posteriorly, each with middorsal spine-like tubercle, epimera roughly triangular. Pleon consisting of single fused segment bearing strong middorsal spine-like tubercle, plus broadly pentagonal pleotelson; latter lacking ornament, with strong lateral angle; apex angle obtuse.

Antennule with three-articulate peduncle and uniaarticulate flagellum bearing four aesthetascs. Antenna equal in length to head plus pereonites 1–4; flagellum of two articles, ending in short claw. Mouth-parts as figured. Pereopod 1 much shorter than pereopod 2, five distal articles setose; dactylus lacking strong terminal claw. Pereopods 2–4 slender, strongly setose, dactyli lacking; three proximal articles with pile of short setules on outer margins, basal article with outer surface granulate; coxa of pereopod 4 forming major part of brood-pouch,

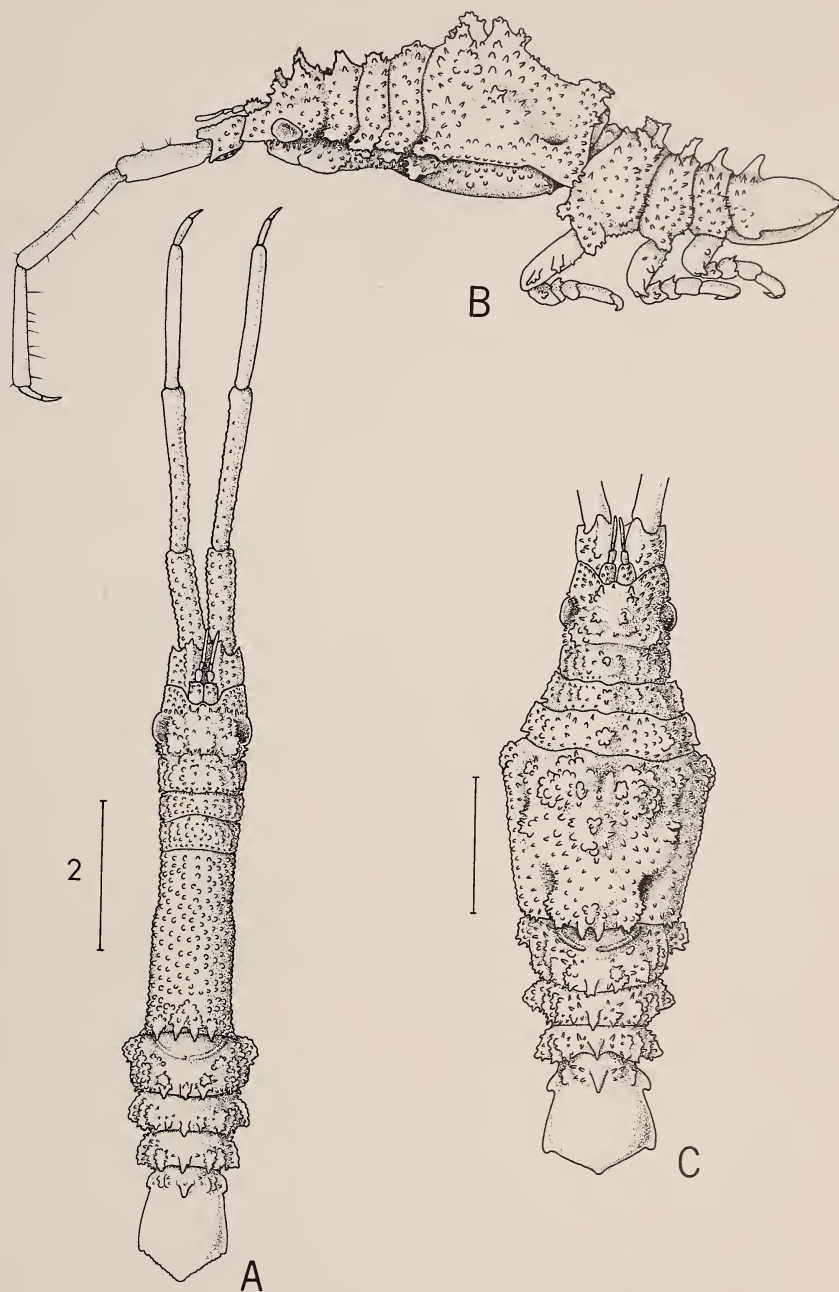


Fig. 1. *Agularcturus granulatus* sp. nov. A. Male, dorsal view. B. Female, lateral view. C. Female, dorsal view. Scales = 2 mm.

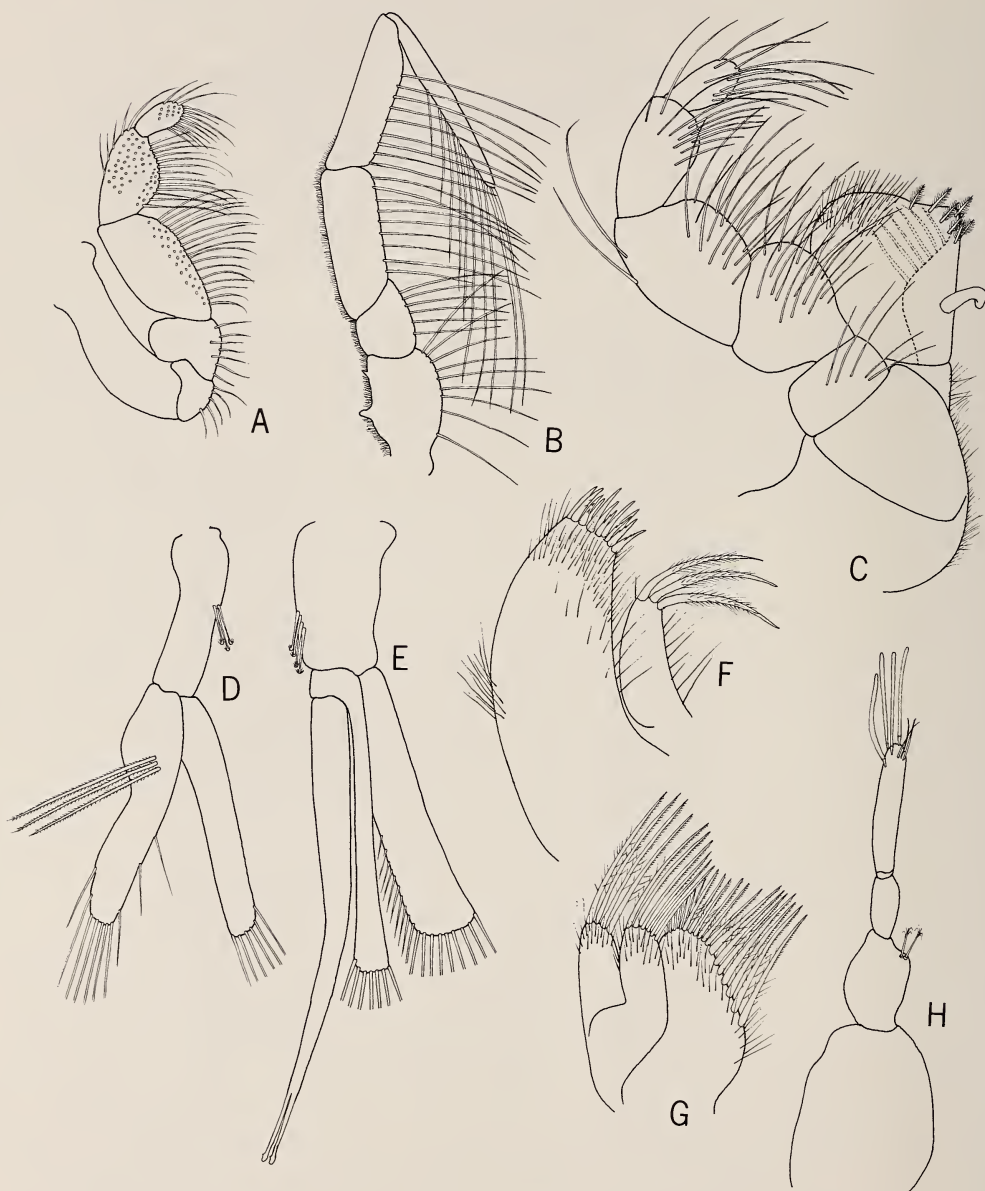


Fig. 2. *Agularcturus granulatus* sp. nov. A. Pereopod 1. B. Pereopod 2. C. Maxilliped. D. Pleopod 1 male. E. Pleopod 2 male. F. Maxilla 1. G. Maxilla 2. H. Antennule.

granulate near articulation. Pereopods 5–7 robust, all articles bearing dense pile of fine setules, longer than in anterior pereopods; bases with two spinose tubercles on outer surface.

Male

Body cylindrical, integument densely granulate. Head and pereonite 1 with low, rounded submedian tubercle. Pereonite 4 slightly longer than head plus pereonites 1–3; posterodorsal margin with four posteriorly directed spinose tubercles. Pereonites 5–7 decreasing in length posteriorly, each with strong spinose middorsal and shorter lateral tubercle. Single fused pleonite bearing single middorsal spinose tubercle. Pleotelson relatively narrower than in female. Antenna equal in length to head plus pereon. Pleopod 1, exopod with broad notch at about midlength of outer margin armed with three elongate bristled spines; about ten plumose setae on distal margin. Pleopod 2, copulatory stylet articulating near base of endopod, basally broad, tapering distally, extending by almost half its length beyond ramus, apically bifid, tips slightly broadened; endopod basally narrow, widening to distal margin bearing seven plumose setae.

Etymology

The specific name refers to the granulate integument of this species.

Antarcturus zur Strassen, 1902

Antarcturus bicornis sp. nov.

Figs 3–4

Material

Holotype SAM–A15670, SM 232, 32°14'S 29°10'E, 560–620 m, 1 ♂, TL 11,5 mm. Paratypes SAM–A15671, SM 232, 560–620 m, 2 ♂ (both damaged), 2 juvs. SAM–A15672, SM 226, 32°28'S 28°58'E, 710–775 m, 1 juv. Paratype USNM 189067, SM 232, 560–620 m, 1 ♂, TL 11,1 mm.

Description

Male

Body cylindrical, integument smooth, with few low, rounded tuberculations. Eyes lateral, well pigmented. Head with anterior pair of dorsal conical spines; anterior margin concave; ventrolateral margins not concealing pereopod 1 and mouth-parts in lateral view. Pereonite 1 fused with head, line of fusion marked by shallow dorsolateral groove, and short ventrolateral slit. Pereonites 2 and 3 similar, short. Pereonite 4 about twice length of preceding segment, cylindrical in dorsal view, with slight posterior flange. Midventral processes lacking on all pereonites. Pereonites 5–7 decreasing in length posteriorly, each with shallow transverse groove. Pleon consisting of three faintly indicated fused pleonites plus broadly convex, posteriorly rounded pleotelson.



Fig. 3. *Antarcturus bicornis* sp. nov. A. Male, lateral view. B. Pleotelson, dorsal view. C. Pereopod 1. D. Pleopod 1 male. E. Pleopod 2 male. Scale = 2 mm.

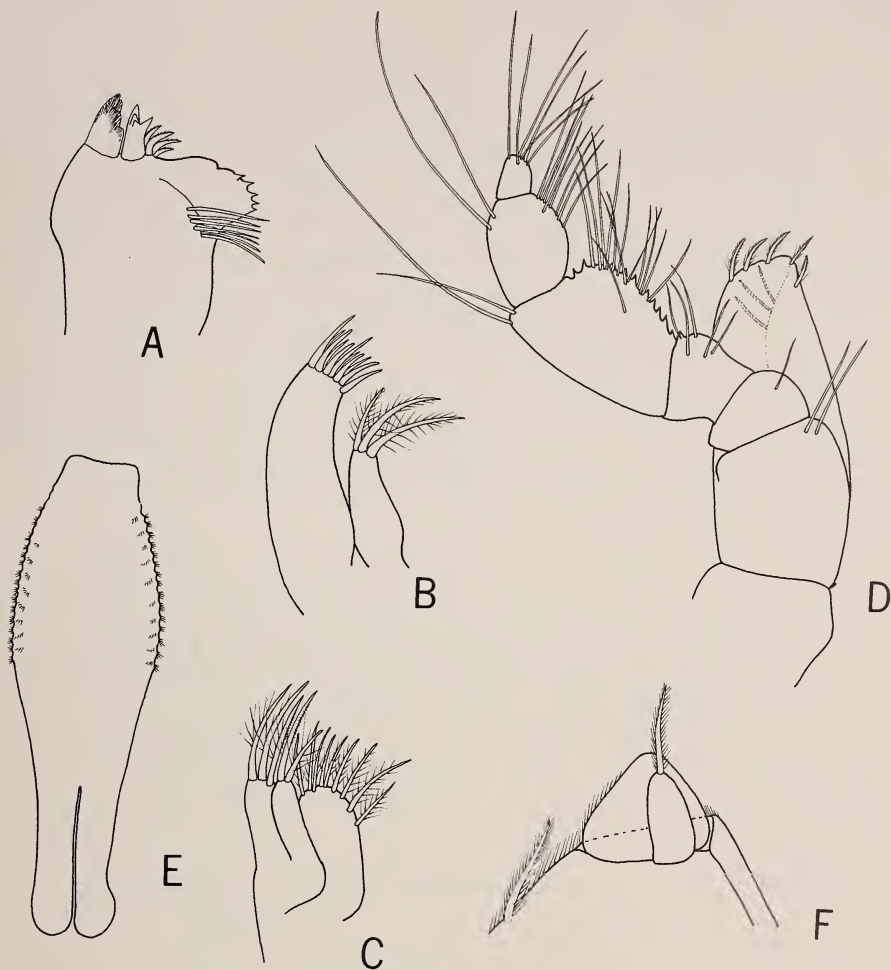


Fig. 4. *Antarturus bicornis* sp. nov. A. Mandible. B. Maxilla 1. C. Maxilla 2. D. Maxilliped. E. Penis. F. Uropodal rami.

Antennule not reaching distal end of antennal peduncular article 3; flagellum uniarticulate. Antenna almost as long as body, articles 4 and 5 of peduncle slender-elongate; flagellum claw-like, of three articles. Mandible with tricuspid sclerotized incisor; strongly spinose lacinia; molar distally broad, armed with marginal serrations and submarginal spines. Maxilla 1, inner ramus with three stout fringed setae; outer ramus with eleven distal spines. Maxilla 2, inner ramus with nine fringed setae; inner lobe of outer ramus with two setae, outer lobe with three setae. Maxilliped, endite with eight distal fringed setae; palp of five articles, medial margin of articles 2 and 3 spinose; article 3 longest and broadest; exopod elongate-oval. Pereopod 1 armed with numerous finely fringed setae-spines on posterior margin; propodus broadest article; dactylus with strong

terminal claw. Pereopods 2–4 similar, slender, becoming more elongate posteriorly; elongate setae on bases, ischia, meri, carpi, and propodi; dactyli slender, with elongate slender claw. Pereopods 5–7 similar, robust, bases becoming shorter posteriorly; fine matting of setules on inner (posterior) surfaces; dactyli curved, with short ungui. Penis distally bilobed, fused for proximal two-thirds, widest at proximal third. Pleopod 1 basis with five retinaculæ on medial margin, thirteen peg-like projections on outer margin; endopod broader than exopod, with oblique groove on anterior surface, distally flexed and convoluted, with rounded mesial lobe bearing elongate plumose setae; numerous simple setae-spines on outer margin proximal to modified apex; exopod elongate-rectangular, bearing plumose setae. Pleopod 2 rami subequal, copulatory stylet articulating at base of endopod, extending just beyond ramus, tapering distally to slender grooved acute apex. Uropoda convex, rami minute, outer ramus triangular, inner ramus one-third basal width of outer, with single apical seta.

Remarks

While the elongation of pereonite 4 and the highly modified apex of the exopod of pleopod 1 is not usual, the rest of the appendages and overall structure of the present species agree with the generally accepted definition of *Antarcturus*. Until a mature female of this species is found and the generic diagnosis is settled, this would seem to be the best placement.

While several species of *Antarcturus* are relatively free of integumental spines and tubercles, none seems to resemble *A. bicornis* in having just two conical spines on the head and not having pleotelsonic ornament.

Etymology

The specific name refers to the two spines on the head of this species.

Astacilla Cordiner, 1795

Astacilla corniger (Stebbing, 1873)

Figs 5–6

Arcturus corniger Stebbing, 1873: 97, pl. 3 (fig. 2) (recorded from Algoa Bay); 1908: 51.

Arcturus (?) *corniger*: Barnard, 1914: 207.

Arcturella corniger: Barnard, 1920: 391; 1925: 381; 1940: 493, 509; 1955: 6. Kensley, 1975a: 37; 1978e: 19, fig. 7B–C.

Antarcturus ornatus Tattersall, 1913: 889, fig. 5. Vanhöffen, 1914: 526.

Astacilla setosa Vanhöffen, 1914: 525, fig. 55.

Arcturopsis hirsutus Barnard, 1914: 207, pl. 19A.

Arcturopsis hirsutus var. *subglaber* Barnard, 1914: 211.

Astacilla mediterranea non Koehler, Barnard, 1920: 388; 1940: 493, 509.

Neastacilla mediterranea: Kensley, 1978e: 33, fig. 15A–B.

Material

Saldanha Bay area. SAM–A52, 160 m, 1 ovig. ♀ (syntype of *Arcturopsis hirsutus* var. *subglaber*). SAM–A3888, 40 m, 3 ♂, 1 ovig. ♀, 3 ♀, 3 juvs.

SAM-A13784, 50–54 m, 2 ♂, 1 ovig. ♀. SAM-A13785, 37 m, 3 ♂, 10 ovig. ♀, 1 juv. SAM-A13787, 18–33 m, 1 ovig. ♀.

Cape Pont area. SAM-A54, 56 m, 29 ♂, 7 ovig. ♀, 7 ♀ (syntypes of *Arcturopsis hirsutus*). SAM-A55, 56 m, 24 ♂, 8 ovig. ♀, 5 ♀. SAM-A3829, 48 m, 1 ♂, 3 ovig. ♀, 1 juv. SAM-A4072, 74 m, 1 ♂.

False Bay. SAM-A53, 22 m, 1 ovig. ♀. SAM-A13786, 26 m, 3 ♂, 1 juv. SAM-A13790, 68 m, 1 ♂, 4 ovig. ♀. SAM-A13794, 73 m, 9 ♂. SAM-13795, 29 m, 1 ♂, 2 juvs. SAM-A13796, 33 m, 3 ovig. ♀. SAM-A13797, 13 m, 3 juvs. SAM-A13798, 31 m, 1 ovig. ♀. SAM-A13799, 13 m, 3 ♂, 4 ovig. ♀, 1 ♀, 2 juvs. SAM-A13800, 26 m, 5 ♂, 1 ovig. ♀, 1 ♀, 11 juvs. SAM-A13801, 26 m, 5 ♂, 2 ovig. ♀, 1 ♀, 2 juvs. SAM-A13802, 22 m, 1 ♂, 5 ovig. ♀, 1 ♀, 6 juvs. SAM-A13803, 44–48 m, 1 ♂, 1 juv. SAM-A13804, 7–9 m, 1 ♀. SAM-A13805, 26–29 m, 1 ♂, 2 ovig. ♀, 1 ♀. SAM-A13806, 15 m, 2 ovig. ♀. SAM-A13807 26–29 m, 1 ♂. SAM-A13808, 33 m, 1 juv. SAM-A13809, 29 m, 2 ovig. ♀. SAM-A13810, 31 m, 1 ovig. ♀. SAM-A13811, 29 m, 1 ovig. ♀. SAM-A13812, 68 m, 1 ♂. SAM-A13813, 31 m, 1 ♂. SAM-A13814, 42 m, 6 ♂, 2 ovig. ♀ 1 juv. SAM-A13815, 5 m, 1 ♂. SAM-A13816, 36 m, 1 ♂, 1 ♀. SAM-A13817, 27 m 5 ♂, 4 ovig. ♀, 1 ♀, 3 juvs. SAM-A13818, 1 ♂, 5 ovig. ♀. SAM-A13836, 19 m, 2 ♂.

Agulhas Bank area. SAM-A3861, 94 m, 2 ♂, 2 ovig. ♀, 1 ♀, 7 juvs. SAM-A4175, 56 m, 1 ovig. ♀. SAM-A4190, 1 ♂, 3 ovig. ♀, 1 juv. SAM-A5956, 80 m, 1 ♂, 2 ovig. ♀, 2 juvs. SAM-A6624, 40 m, 1 ovig. ♀. SAM-A13793, 110 m, 8 ♂, 2 ovig. ♀, 2 juvs. SAM-A13819, 84 m 5 ♂, 1 ovig. ♀, 1 ♀. SAM-A13820, 93 m, 1 ♂, 1 ovig. ♀, 1 juv. SAM-A13821, 45 m, 2 ovig. ♀. SAM-A13822, 49 m, 1 ♂, 1 ovig. ♀, 2 juvs. SAM-A13823, 79 m, 1 ovig. ♀. SAM-A13824, 110 m, 1 ovig. ♀. SAM-A13825, 48 m, 1 ♂. SAM-A13826, 42 m, 2 ♂. SAM-A13827, 73 m 1 ♂. SAM-A13828, 93 m, 2 ♂. SAM-A13829, 97 m, 1 ♂. SAM-A13830, 45 m, 1 ♂. SAM-A13831, 36 m, 1 ovig. ♀. SAM-A13832, 42 m, 1 ♂. SAM-A13833, 44 m, 2 ♂, 1 ovig. ♀. SAM-A13834, 42 m, 2 ovig. ♀. SAM-A13835, 110 m, 1 ♂, 3 ovig. ♀.

East London area. USNM 189068, SM 185, 90 m, 1 ♂, 1 ovig. ♀, 1 ♀, 5 juvs.

Description

Female

Head and pereonite 1 fused, line of fusion marked by shallow dorsolateral groove and short slit in ventrolateral margin. Head with large rounded-triangular eye; armed with short anterior and longer posterior pair of conical tubercles. Pereonite 1 with strong middorsal conical tubercle. Pereonites 2–3 with median conical tubercles shorter than those of pereonite 1, and with low, rounded, dorsolateral tubercles; coxal plates distinct, subcircular. Pereonite 4 longer than head and three anterior pereonites together; body widest (in dorsal view) at anterior end of pereonite 4; anterior middorsal process consisting of

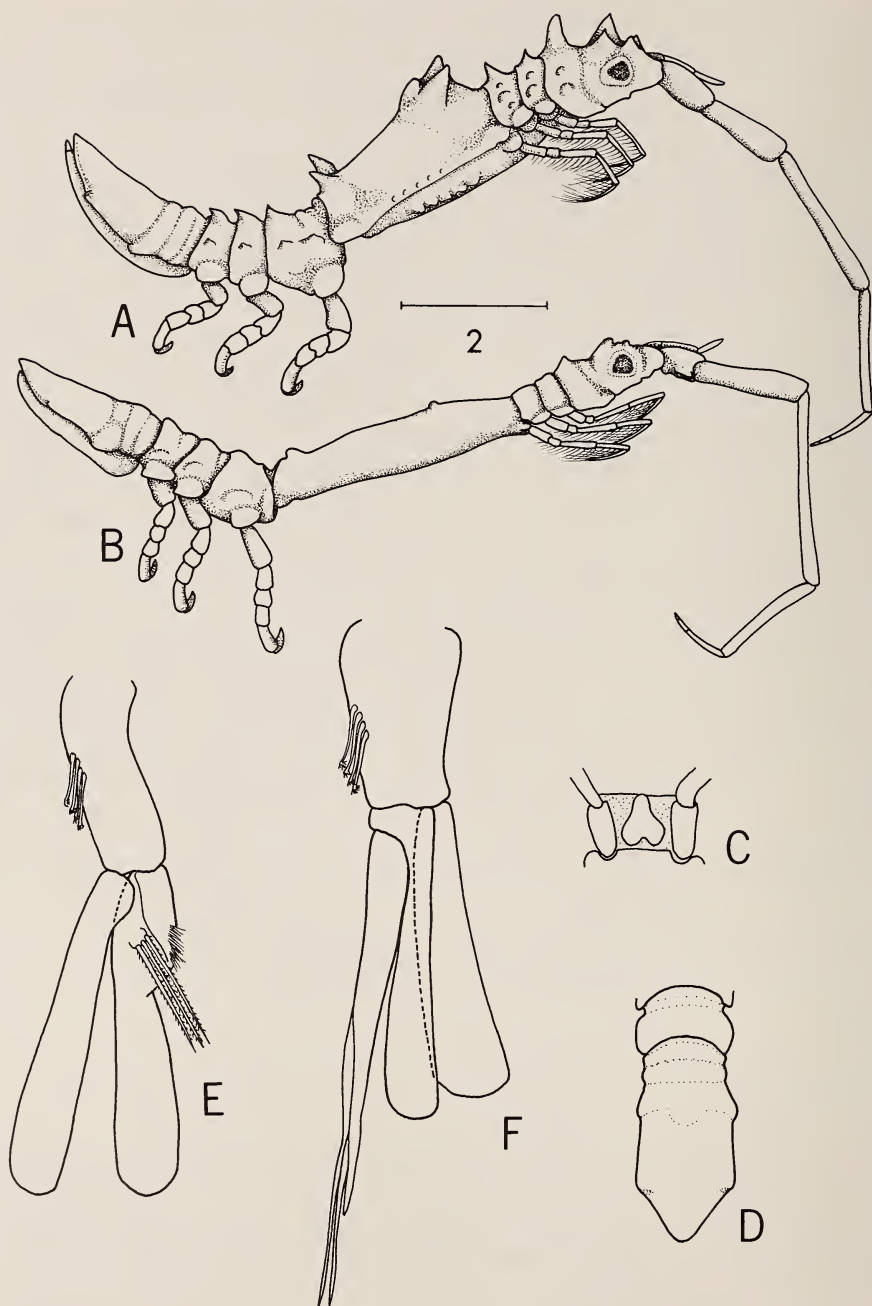


Fig. 5. *Astacilla corniger* (Stebbing) A. Female, lateral view. B. Male, lateral view. C. Pereonite 4, male, ventral view. D. Pleotelson, dorsal view. E. Pleopod 1 male. F. Pleopod 2 male. Scale = 2 mm.

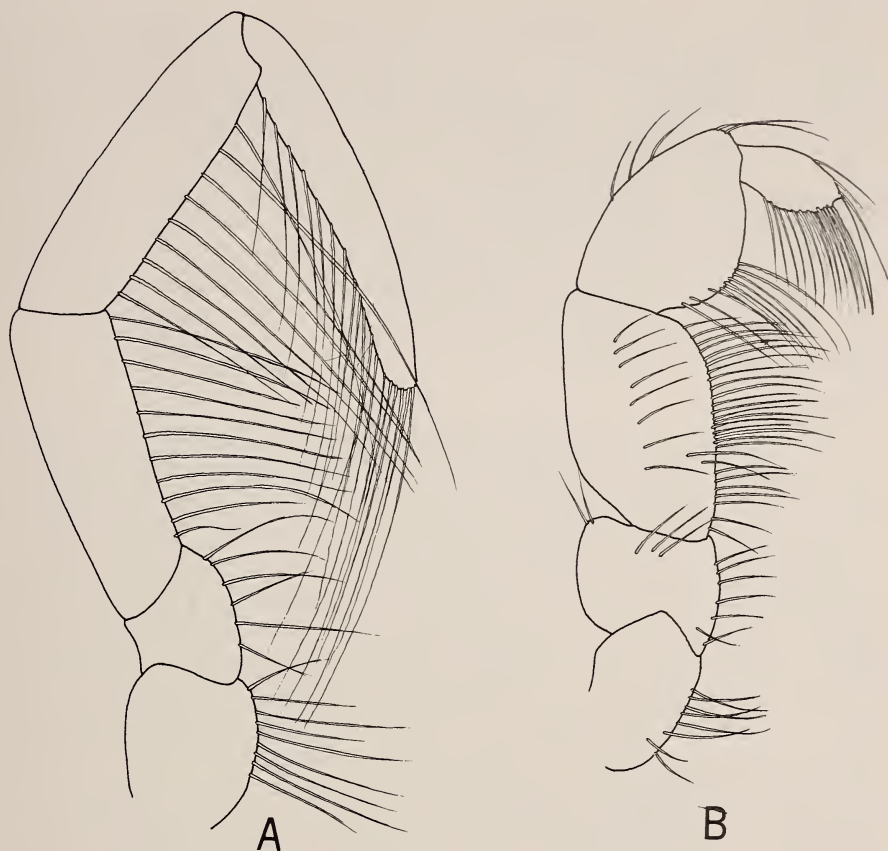


Fig. 6. *Astacilla corniger* (Stebbing) A. Pereopod 2. B. Pereopod 1.

two large lateral slightly flattened apically acute tubercles flanking shorter rounded middorsal tubercle; two large conical submedian dorsal tubercles near posterior margin; four or five low, rounded tubercles laterally; coxal plate forming major part of brood-pouch, with row of low tubercles near articulation. Pereonites 5–7 each with short conical middorsal tubercle, and low lateral tubercle; sideplates rounded. Pleon consisting of three fused segments indicated by shallow dorsolateral grooves, and pentagonal pleotelson, latter dorsally smooth, apically rounded. Antenna, if extended posteriorly, reaching pereonite 7. Mouthparts typical of genus. Pereopod 1 with ventrolateral margins concealed within ventrolateral margins of head and pereonite 1. Pereopods 2–4 increasing in length posteriorly, slender, setose. Pereopods 5–7 robust, decreasing in length posteriorly. Outer uropodal ramus very short, triangular, inner ramus much smaller, bearing single apical seta.

Male

Head with two low, rounded anterior tubercles, and two larger, rounded posterior tubercles. Pereonite 1 with single conical middorsal tubercle. Pereonite 4 elongate, subcylindrical, widening slightly at midlength, with single small middorsal rounded tubercle in anterior half, another near posterior margin. Pereonites 5–7 lacking tubercles. Antenna, if extended posteriorly, reaching to pereonite 7. Ventral process on pereonite 4 trilobed. Pleopod 1 rami subequal in length, both bearing elongate plumose setae; exopod with indentation in proximal half armed with three elongate bristled setae. Pleopod 2, rami subequal in length, bearing elongate plumose setae; copulatory stylet on endopod extending well beyond rami, terminating in one short and two more elongate slender, apically acute spinose processes.

Remarks

The chaotic state of arcturid generic taxonomy is well illustrated by the present species, *Astacilla corniger*, having been placed in six different genera since 1873. An element of doubt still remains, but the present placement in *Astacilla* was decided by several factors: pereopod 1 has a strong terminal claw on the dactylus; pereopods 2–4 lack dactyli; pleopod 1 in the male has an endopod with a median notch and three specialized setae, while the copulatory stylet of pleopod 2 is apically trifid. These four features agree with the definition of *Astacilla*, as elucidated by Lew Ton (pers. comm.). While the male of *A. corniger* has the slender body form typical of *Astacilla*, the ovigerous female is considerably broader, especially at pereonite 4, than in many other females of *Astacilla* species. Until *Arcturella* and *Arcturopsis* can be more closely defined, the present placement is perhaps the most satisfactory solution.

Sixty-five samples of *Astacilla corniger* have been examined and the degree of variation assessed. At one extreme the females have low, rounded tubercles with fairly dense pile of golden setae, the males have a low pile of setae and lack tubercles. At the other end of the range the females lack setae and have well-developed and elongate tubercles, sometimes becoming spine-like, while the males lack setae and have rounded to spinose tubercles. Between these extremes almost every variation has been noted, sometimes this variation being considerable within the same sample. There is thus no justification for maintaining Barnard's (1914) variety *subglaber*, either as a subspecies or as a separate species.

Barnard (1920) based his conclusion that his specimen from Natal was the same as the Mediterranean species on Koehler's description and somewhat diagrammatic figure. Barnard did note that the tubercle on pereonite 4 in the female was not symmetrical as in Koehler's figure. In fact, the Natal specimen was an immature specimen. With fresh material from the Mediterranean and mature material from Natal, closer comparison is possible. Pereonite 4 in the female easily separates the two species: *Astacilla mediterranea* has a single conical anterior and posterior middorsal tubercle; *A. corniger* has a trilobed anterior and a bilobed posterior middorsal tubercle. The males of the two species are more

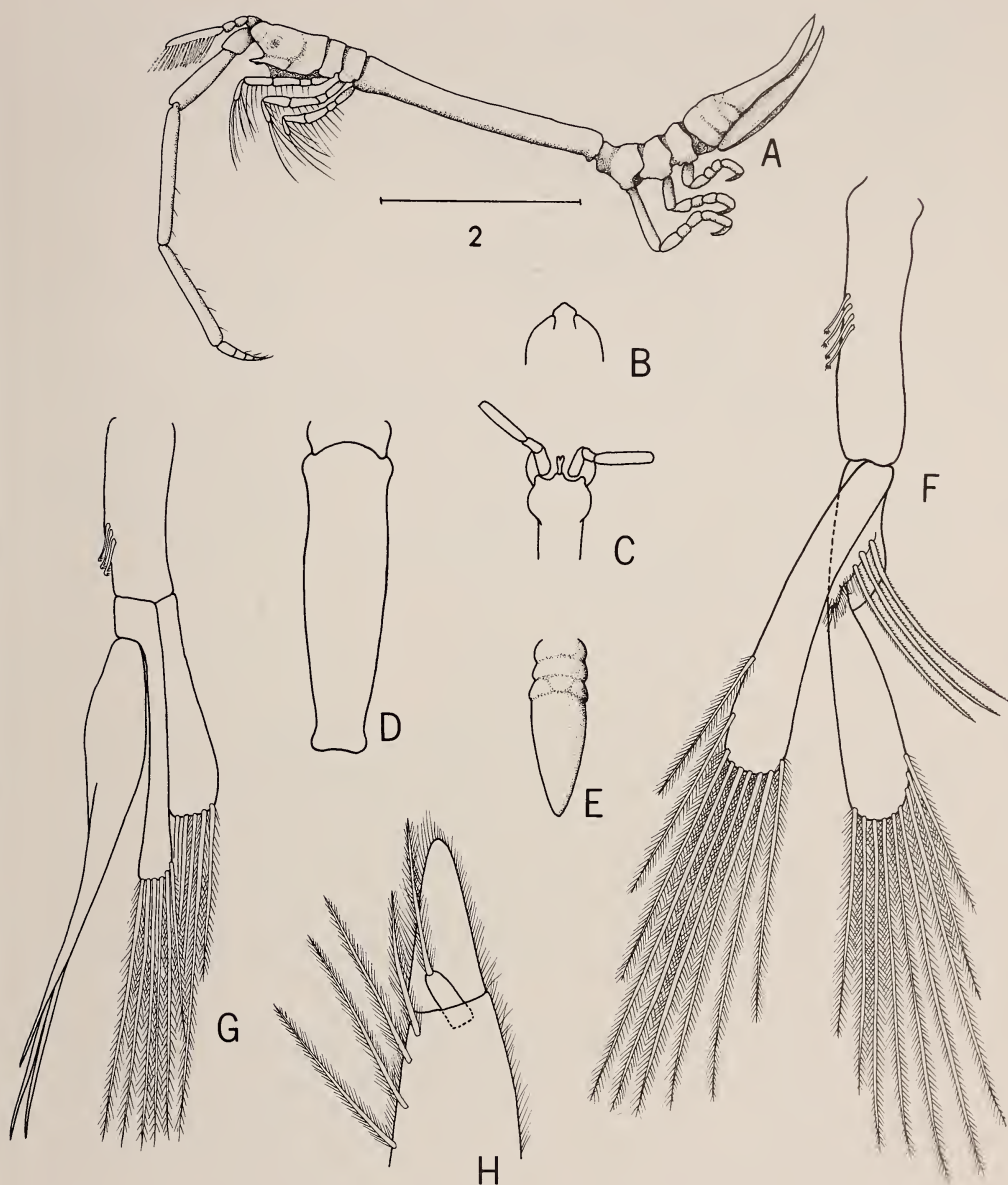


Fig. 7. *Astacilla eminentia* sp. nov. A. Male, lateral view. B. Anterior margin of head. C. Pereonite 4 male, ventral view. D. Pereonite 4 female. E. Pleotelson, dorsal view. F. Pleopod 1 male. G. Pleopod 2 male. H. Uropodal rami. Scale = 2 mm.

similar, except in pleopod structure. *A. mediterranea* has an undifferentiated pleopod 1, while the copulatory stylet of pleopod 2 is a single robust cylindrical structure. (There is a possibility that the recent Mediterranean material examined is immature, in which case this comparison is invalid). *A. corniger* possesses a modified endopod of pleopod 1, while the copulatory stylet of pleopod 2 is a slender apically trifid structure. Similar pleopodal structure is seen in *A. longispina* and *A. eminentia*.

Astacilla eminentia sp. nov.

Figs 7–8

Material

Zululand to Transkei area. Holotype SAM–A15673, SM 232, 32°14'S 29°10'E, 560–620 m, 1 ♂, TL 6,7 mm. Paratypes SAM–A15674, SM 103, 28°31'S 32°34'E, 680 m, 1 ♂, TL 6,0 mm, 3 juvs. Paratype SAM–A15675, SM 109, 28°41'S 32°36'E, 1 300 m, 1 ♂, TL 6,3 mm. Paratypes SAM–A15676, SM 232, 560–620 m, 1 ♂, TL 3,5 mm, 2 ♀, (damaged). Paratypes SAM–A17791, SM 250, 31°59'S 29°22'E, 150–200 m, 2 ♂, TL 5,1 mm, 5,3 mm. Paratypes USNM 189069, SM 226, 32°28'S 28°58'E, 710–775 m, 2 ♂, TL 7,1 mm, 7,0 mm.

Description

Male

Integument smooth, body elongate, especially pereonite 4, cylindrical. Head fused with pereonite 1, with lateral incision and dorsolateral groove indicating area of fusion; anterior margin strongly concave, with tiny rostral point; anterolateral and ventrolateral margin forming rim of buccal cavity; anteroventral margin projecting, trilobed. Eyes circular, barely pigmented. Pereonites 2–3 subequal; pereonite 4 elongate-cylindrical; pereonites 5–7 similar, becoming shorter posteriorly. Pleon consisting of three fused pleonites, each indicated by shallow grooves, plus narrowly triangular pleotelson; latter with posterior half dorsally flexed.

Antennule of three short peduncular articles and uniarticulate flagellum bearing nine aesthetascs distally. Antennal peduncle of two short proximal articles and three more elongate articles, fourth longest; flagellum of three or four articles. Mouth-parts typical of genus. Pereopod 1 within buccal rim, shorter than pereopods 2–4, four distal articles bearing elongate fringed setae; strong terminal spine present on dactylus, strong serrate spine on propodus. Pereopods 2–4 increasing in length posteriorly, dactyli absent; four distal articles bearing very elongate fringed setae. Pereopods 5–7 robust, with fine setules on posterior margins of five distal articles. Penis distally bifid, curved. Pleopod 2 with exopod shorter than endopod, both rami bearing elongate plumose setae; copulatory stylet attached near base of endopod, proximally inflated, distally tapering to trifid apex, extending to ends of endopodal setae. Uropod widest at midlength,

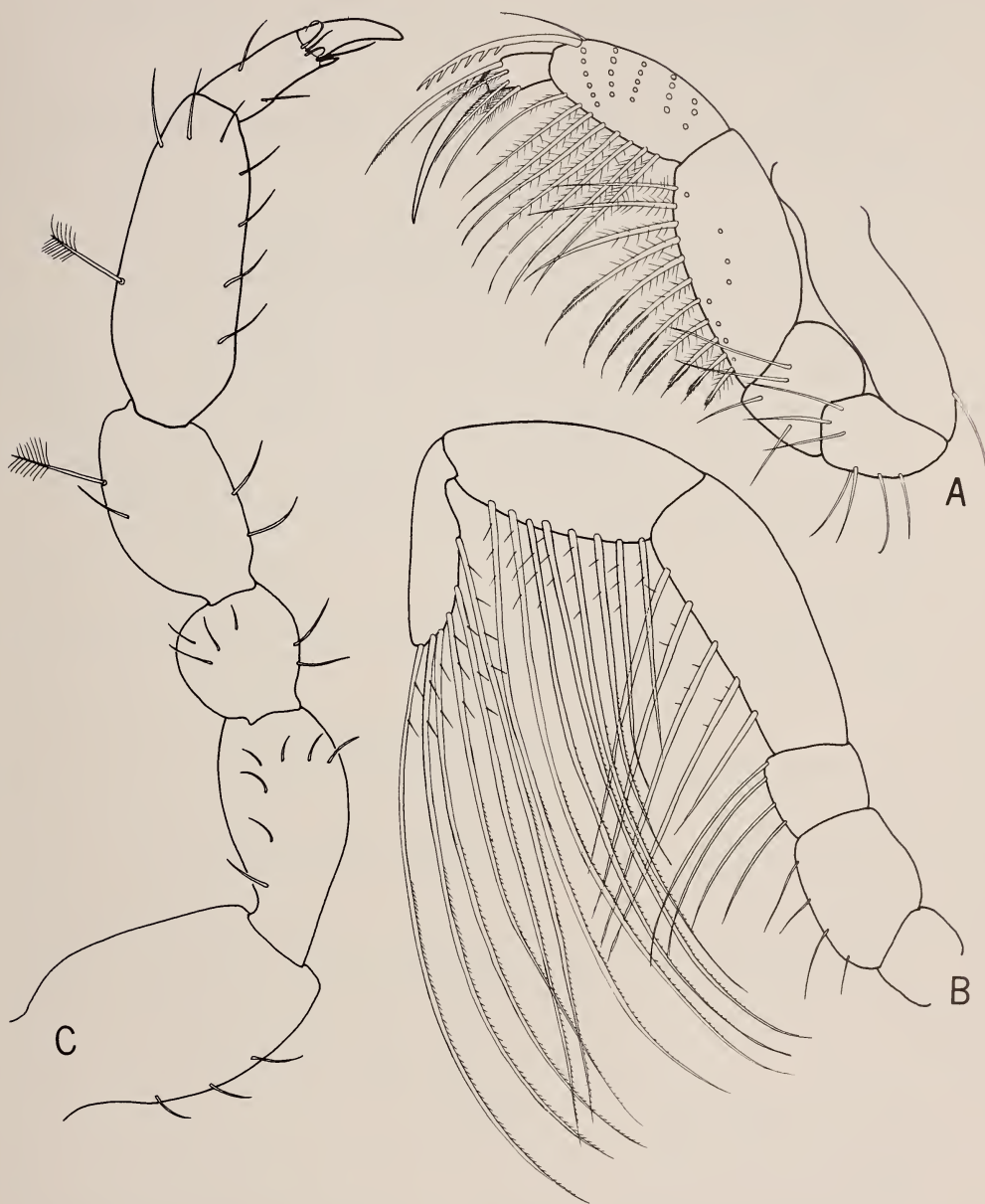


Fig. 8. *Astacilla eminentia* sp. nov. A. Pereopod 1. B. Pereopod 2. C. Pereopod 7.

narrowly tapered distally, outer ramus narrowly triangular, inner ramus tiny, bearing single terminal seta.

Female

Pereonite 4 inflated, widest at midlength; coxae and oostegites forming major part of brood-pouch.

Remarks

The present species resembles *Astacilla bacillus* (Barnard, 1920), recorded from False Bay to Zululand, in its overall slender-cylindrical form, but differs in several features, three of which easily separate these two species: pereonite 5 in *A. bacillus* is ventrally produced and markedly larger than pereonites 6 and 7; in *A. eminentia*, pereonite 5 is subequal to pereonites 6 and 7; the eye is pyriform and strongly pigmented in *A. bacillus*, circular and weakly pigmented in *A. eminentia*; the anterior buccal rim projects prominently (in lateral view) in *A. eminentia*, but is barely noticeable in *A. bacillus*. Size is a further separating feature, adult males of *A. bacillus* having a total length of 20,0 mm; adult males of *A. eminentia* reach 7,1 mm in total length.

Etymology

The specific name '*eminentia*', from the Latin meaning 'that which projects', refers to the anterior margin of the buccal rim.

Astacilla longispina (Kensley, 1978)

Neastacilla longispina Kensley, 1978a: 133, figs 5–6; 1978e: 33, fig. 14C–D.

Material

East London area. SAM–A17792, SM 250, 150–200 m, 1 ♂, 1 ♀.

Remarks

From the figure of pereopods 1 and 2 (Kensley 1978a, fig. 6b–c), it can be seen that this species is a typical *Astacilla sensu* Lew Ton.

Astacilla mediterranea Koehler, 1911

Fig. 9

Astacilla mediterranea Koehler, 1911: 44, figs 25–29.

Material

USNM 211346, Marseille, 75 m, 7 ♂, 2 ovig. ♀, taken from the gorgonacean *Lophogorgia sarmentosa*.

Previous records

Villefranche, Mediterranean Sea.

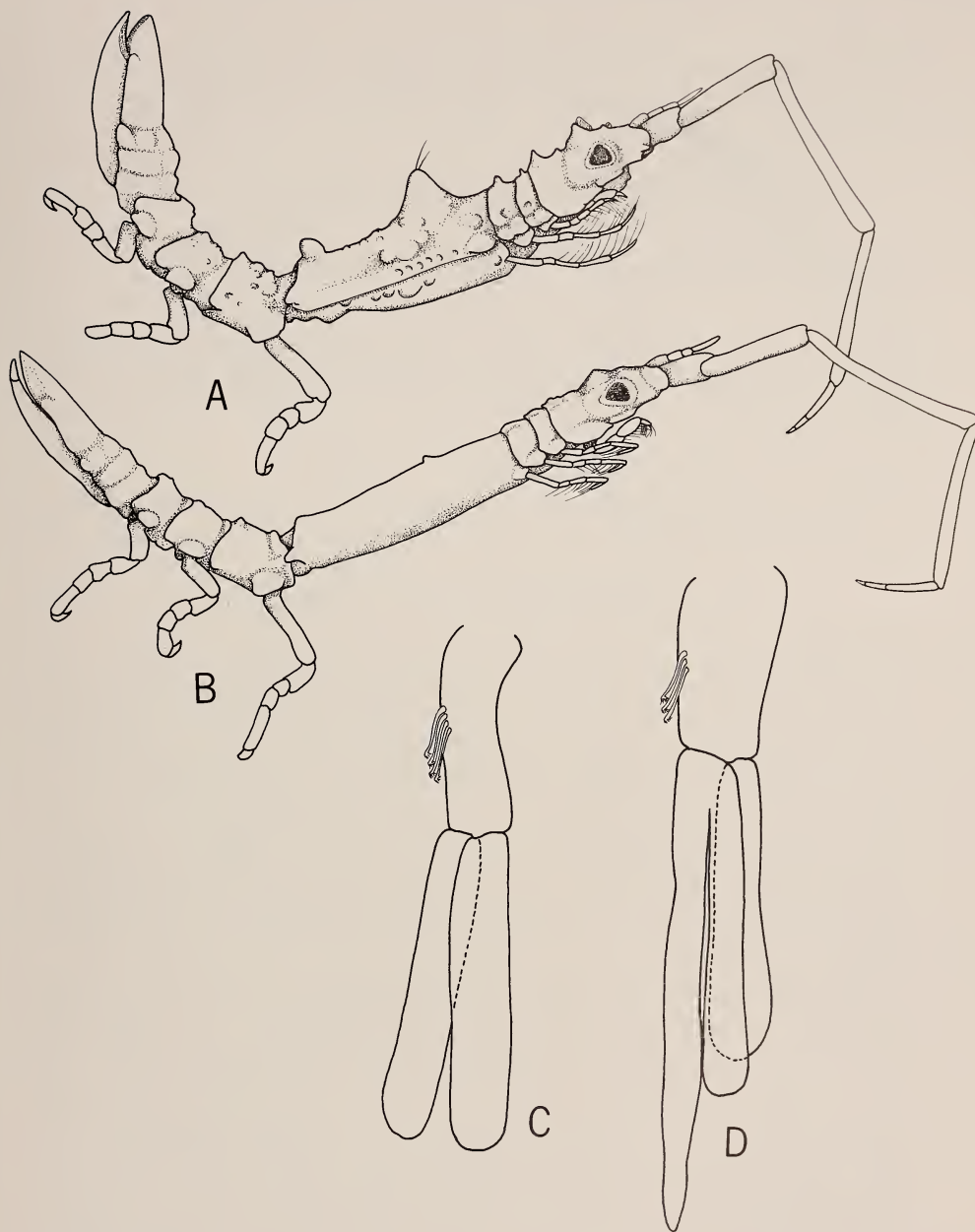


Fig. 9. *Astacilla mediterranea* Koehler. A. Female, lateral view. B. Male, lateral view.
C. Pleopod 1 male. D. Pleopod 2 male (immature).

Remarks

Because of the confusion with the South African *Astacilla corniger*, and because the species has not been described since 1911, the male and female are figured here.

Astacilla tranquilla (Kensley, 1975)

Fig. 10

Neastacilla tranquilla Kensley, 1975a: 62, fig. 13; 1978e: 33, fig. 15C-D.

Material

East London area. SAM-A17793, SM 164, 90 m, 1 ♂. SAM-A17794, SM 163/4, 90 m, 1 ♂, 1 juv. SAM-A17795, SM 179, 80 m, 1 ♂. SAM-A17796, SM 185, 90 m, 2 ♂.

Remarks

The first and second pereopods agree with the definition of *Astacilla sensu* Lew Ton.

Microarcturus Nordenstam, 1933*Diagnosis*

Body anteriorly somewhat dorsoventrally flattened (more marked in female); seldom geniculate between pereonites 4 and 5. Head with lateral margins incised. Eyes dorsolateral and well developed and pigmented, to weakly pigmented or absent. Integument variously sculptured, frequently tuberculate. Pereonite 1 fused with head, line of fusion sometimes marked by groove. Coxae visible dorsally on all pereonites, those of pereonites 2-4 often extending laterally, triangular or semicircular in dorsal view. Pleon consisting of three fused segments plus pleotelson, two anterior fused segments demarked by shallow dorsal grooves; pleotelson often pentagonal or shield-shaped, posteriorly acute or narrowly rounded.

Antennule with three-articulate peduncle; flagellum of single article bearing aesthetascs. Antenna less than total body length; peduncle of four articles; flagellum of two articles, ending in short claw. Mandible stout, sclerotized, with well-developed incisor, lacinia mobilis, spine row, and molar. Maxilla 1 biramous, outer ramus with stout distal spines, inner with three stout setae. Maxilla 2, inner ramus with several stout distal setae; two lobes of outer ramus each with two stout elongate distal setae. Maxilliped with broad endite; five-segmented setose palp; broad epipod. Pereopod 1 considerably shorter than following legs, hidden by lateral flanges of head and pereonite 1, bearing numerous fringed spines. Pereopods 2-4 relatively slender, with elongate setae on posterior margins. Pereopods 5-7 robust, non-setose. Uropods folded ventrally, biramous, hinging with pleotelson at about midlength, basis forming most of operculum; outer ramus short, triangular, tipped with single seta; inner ramus

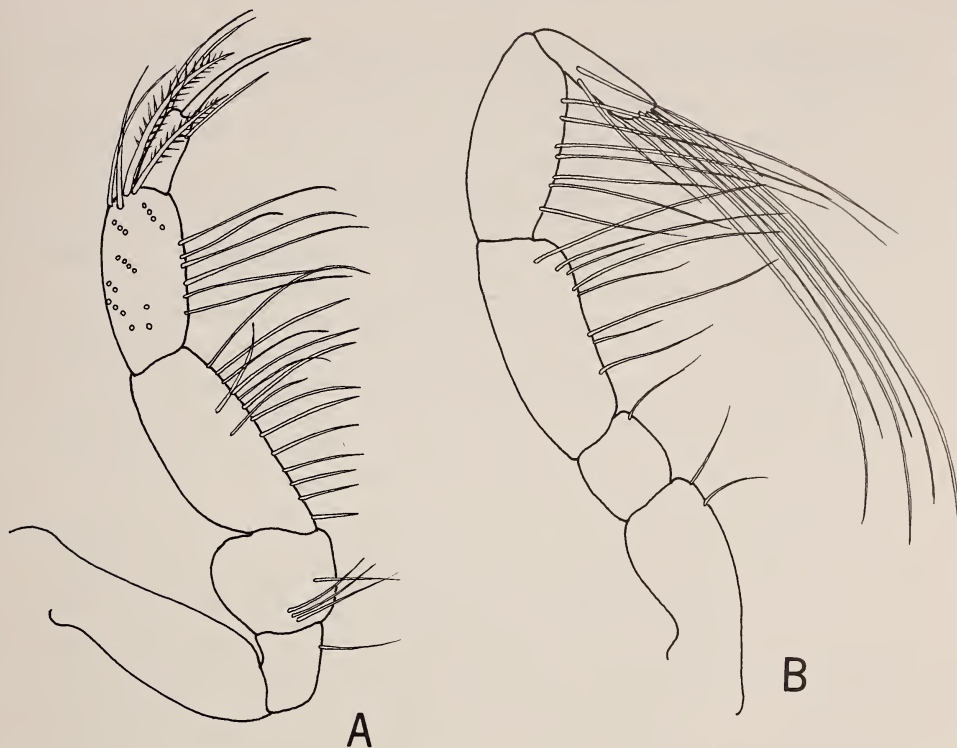


Fig. 10. *Astacilla tranquilla* Kensley A. Pereopod 1. B. Pereopod 2.

minute, with single distal seta. Penis in male elongate, curved, distally bifid. Pleopod 1 in male, basis with three to five retinaculae on medial margin, row of five to fifteen peg-like spines on outer margin, posterior face grooved, distally rounded and variously convoluted, distal margin with several elongate plumose setae; endopod varying in length from being equal in length to exopod, to less than half length and width of exopod. Pleopod 2 in male with stout grooved copulatory stylet articulating at base of endopod; apex of copulatory stylet varying from simple gutter-like opening, to bilobed and convoluted.

Remarks

Nordenstam (1933) separated twelve species under *Microarcturus*, from an unwieldy group of species variously described as *Antarcturus* or *Arcturus*, on the following criteria: antennae shorter than total body length, with flagellum of three articles (rarely two or four); abdomen short, never longer than last four pereonites. Nordenstam (1933: 128) also noted that *Microarcturus* contained 'small forms'.

Hale (1946) noted that at least one species mentioned by Nordenstam under *Microarcturus* possesses a longitudinally cleft exopod of pleopod 1 in the male,

thereby placing it closer to *Pseudarcturella*, while in another species the pleon is slightly longer than the last four pereonites. Thus the character of the length of the antennae alone separates *Microarcturus* from closely related forms.

Yet another difference between *Microarcturus* and *Antarcturus* not hitherto noted lies in the structure of the lateral flanges of the head and pereonite 1. This is similar to the criterion used by Zur Strassen (1902) to separate *Arcturus* and *Antarcturus*. In *Antarcturus*, there is almost no development of a lateral flange on the head below the eyes, and on pereonite 1. The mouth-parts and pereopod 1 are thus exposed in lateral view. In *Microarcturus* there is some development of lateral flanges, but not sufficient to conceal completely the mouth-parts and pereopod 1 in lateral view, as in *Arcturus*. Another, but not very satisfactory, feature of difference is that of the general body shape of gravid females. In *Antarcturus* ovigerous females retain an overall, generally cylindrical, shape, with barely a bulge in the region of the marsupium. In *Microarcturus* ovigerous females are distinctly broadened in the region of the marsupium with a degree of dorsoventral flattening.

In the present discussion of *Microarcturus* species have been recognized primarily on the basis of body shape-ornamentation combination, plus the structure of the male reproductive appendages. Taken alone, body shape-ornamentation would be an insecure basis for species separation, especially considering the degree of variation already noted in the group (e.g. *M. similis*, *M. stebbingii*, in Nordenstam 1933: 159). In this study sixty-five samples of *M. similis* have been examined, giving a good idea of the range of variation in body shape and integumental sculpturing. The shape of the epimera of pereonites 2-4, being either triangular and acute, or semicircular, remains constant, regardless of the integumental ornamentation. It is unfortunate that Schultz (1982b), in designating new astacillid genera, did not supply information or figures for several, basing them instead on integumental ornamentation and presence or absence of eyes. The former feature, as noted above for *M. similis*, and for *M. halei* (p. 243) (and for *Arcturides cornutus*, in Kensley 1980) can be variable both within and between species. Eyes may be present or absent, as demonstrated in species of *Microarcturus*.

The first and second pleopods of the male provide another set of features considered useful for specific separation. On the outer margin of the bases of pleopod 1 some variation in the number of peg-spines has been noted, but generally not varying by more than one or two spines within a species. The exopod of pleopod 1 in the male is grooved on the posterior face and the distal part generally bears a rounded lobe bearing elongate plumose setae plus a variously shaped finely setulose lobe in the area of the distal end of the groove. There would appear to be a trend in reduction in size and setation of the endopod, being of equal length to the exopod in *M. similis*, and less than half the length and width, and with few plumose setae, in *M. oudops*. This trend may be correlated with depth, the reduction being clearest in the deepest occurring species. The copulatory stylet of pleopod 2 in the male varies from being a simple

tapering gutter-like structure to an almost closed tube having a bilobed and convoluted apex. Within a species there would seem to be little variation in the adult in these appendages.

Distribution

As most of the twelve species of *Microarcturus* discussed here have been taken from a very few collecting stations, the following remarks must be treated with caution.

Six species have not been recorded from depths beyond 100 m and may be termed shallow-continental shelf forms; three species have been recorded from 150 m to depths in excess of 700 m—these may be termed deep shelf-slope species; three species have been taken beyond 550 m only and may be termed slope species. Of these latter, *M. oudops* (680–1 500 m) has weakly pigmented eyes, while *M. biserialis* (1 300 m) lacks eyes completely. (See Table 1.)

The evolutionary radiation of the twelve South African species of *Microarcturus* gives rise to some observations, in spite of the relatively few stations involved. From Saldanha Bay to the Agulhas Bank four species have been taken from shallow water (9–88 m). (*M. similis* has also been taken from a single station off Lüderitz.) As this area has been well sampled to depths of 200 m, it can be said with some confidence that the known range of these species reflects their true geographical distribution. These four species seem to form a natural group, having a simple, open copulatory stylet and relatively simple endopodal apices to pleopod 1 in the male. The six east-coast species from shallow to shelf-slope depths also seem to form a natural group, having convoluted apices of the stylet and pleopod 1 in the

TABLE 1
Distribution of southern African *Microarcturus*.

Species	Depth range	Geographic range	Depth category
<i>dayi</i>	9–18	False Bay	shallow shelf
<i>similis</i>	15–88	Saldanha Bay–Still Bay	shallow shelf
<i>quadriconus</i>	22–80	False Bay–Still Bay	shallow shelf
<i>laevis</i>	48–81	False Bay–Agulhas Bank	shallow shelf
<i>nordenstami</i>	90	East London	shallow shelf
<i>ornatus</i>	150–700	Still Bay–Transkei	deep shelf/slope
<i>longispina</i>	150–775	Transkei	deep shelf/slope
<i>halei</i>	150–1 300	Transkei–Zululand	deep shelf/slope
<i>youngi</i>	550–680	Zululand	slope
<i>oudops</i>	680–1 500	Cape Point–Zululand	slope
<i>biserialis</i>	1 300	Zululand	slope

male. The deeper occurring species (*M. ornatus* and *M. halei*) appear to have relatively wide geographic ranges, while the two shallow species (*M. barnardi* and *M. nordenstami*) appear to have a more restricted range.

On a somewhat restricted scale, this distribution pattern agrees with that of other isopod groups, e.g. the anthuridans, viz. shallow species with high endemicity and narrow ranges, deep species with wide geographic ranges.

As little is known of the distribution of the non-South African species of *Microarcturus*, some of which are taxonomically poorly defined, no further speculation on the history of the genus can be made.

In the following discussion of individual species a diagnosis is given for each, covering only the features used for separation. Figures of whole animals plus relevant appendages are also provided. Only for *M. similis*, the most frequently recorded species, are all the appendages figured.

Microarcturus barnardi sp. nov.

Fig. 11

Material

East London area. Holotype SAM-A17797, SM 163, 33°04'S 28°06'E, 90 m, 1 ovig. ♀, TL 5.0 mm; allotype, 1 ♂, TL 5.0 mm. Paratypes SAM-A17798, SM 163, 90 m, 5 ♂, 1 ovig. ♀, 12 juvs. USNM 189070, SM 163, 90 m, 4 ♂, 2 ovig. ♀.

Diagnosis

Integument with numerous rounded tubercles. Tuberculate supraocular ridges fairly prominent, but not as strong as in *M. nordenstami*. Eyes dorso-lateral, well pigmented. Pereonites 2–4 each with central clump of tubercles anterodorsally. Epimera of pereonites 2–3 broadly oval in female, epimeron 4 reduced. Pleotelson apically narrowly rounded, lacking lateral angle, with large elongate tubercles dorsally. Bases of pereopods 2–4 unarmed. First fused pleonite in male with single dorsal row of tubercles; second fused pleonite consisting of two large rounded tuberculate bosses, markedly inflated and convex in lateral view. Third fused pleonite with single middorsal rounded tuberculate boss. Pleopod 1 in male, distal margin rounded, bearing eight short plumose setae, running imperceptibly into finely setulose rounded lobe in area at end of groove; endopod about three-fourths length of and slightly more than half width of exopod. Copulatory stylet of pleopod 2 distally bilobed and convoluted.

Remarks

This species was collected with a single specimen of *M. nordenstami* off East London, in 90 m. These two species may easily be separated by the strong carunculated supraocular ridges, granulate pereonal bosses, and angled pleotelson of *M. nordenstami*, and the swollen fused pleonite 2 and non-angled pleotelson of *M. barnardi*.

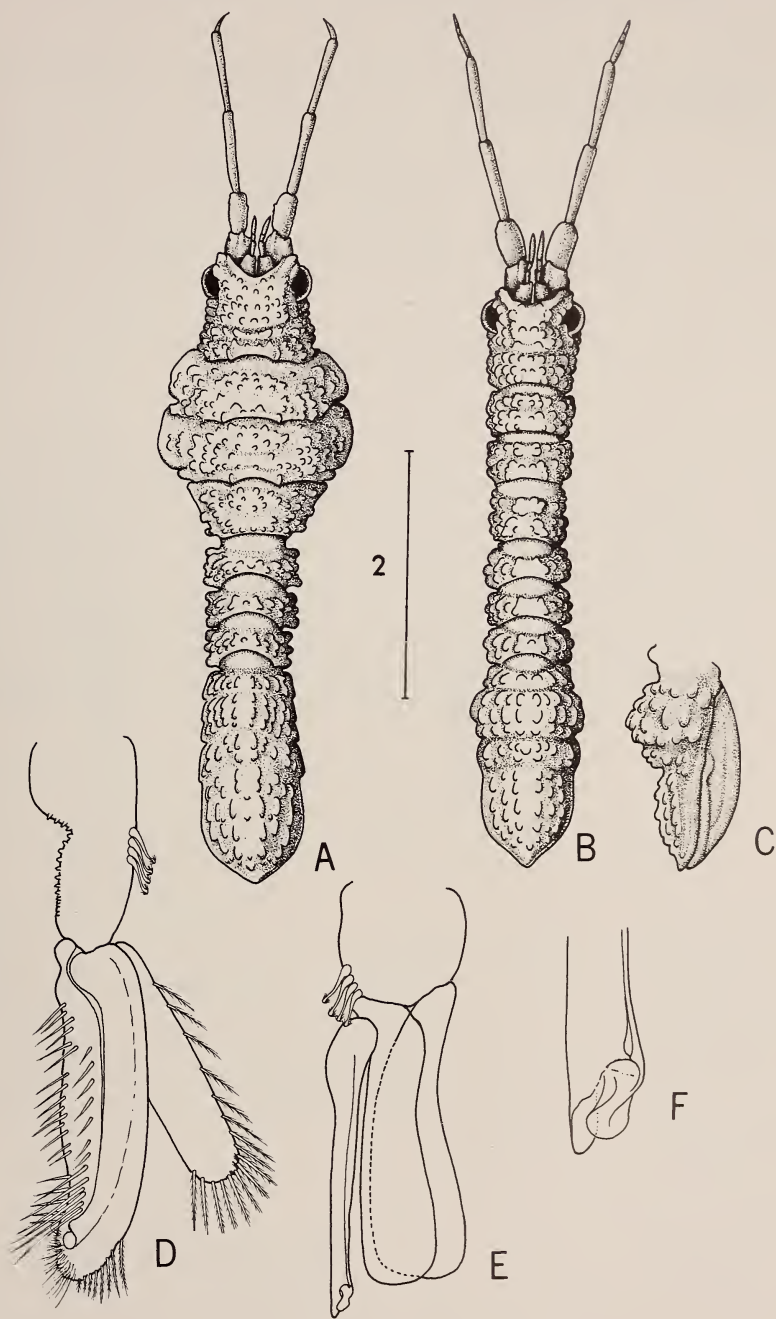


Fig. 11. *Microarcturus barnardi* sp. nov. A. Female, dorsal view. B. Male, dorsal view.
 C. Pleotelson, male, lateral view. D. Pleopod 1 male. E. Pleopod 2 male.
 F. Apex of copulatory stylet. Scale = 2 mm.

Etymology

The species is named for the late Dr K. H. Barnard who contributed much knowledge to isopod systematics.

Microarcturus biserialis Kensley, 1978

Fig. 12

Microarcturus biserialis Kensley, 1978a: 128, fig. 2; 1978e: 27, fig. 11A–B.

Material

Holotype SAM–A15467, 1 300 m, 1 ♂; paratypes, 2 ♂.

Diagnosis

Integument finely granulate. Head lacking eyes or even unpigmented ommatidia; with one pair of narrow submedian processes. Pereonites 1–7 each with one pair submedian conical processes. Epimera of pereonites 2–3 short, triangular. Fused pleonites 1–3 each with submedian pair of conical processes, anterior pair smallest. Pleotelson with distinct lateral angle, posterior margin broadly triangular. Pleopod 1 ♂, with distal margin of exopod formed by finely setulose lobe, evenly convex; three short plumose setae medially; endopod slightly less than half length of exopod, lacking elongate plumose setae, having only fine setules. Copulatory stylet robust, open, distally acute, simple. Female unknown.

Microarcturus dayi Kensley, 1977

Fig. 13

Microarcturus dayi Kensley, 1977: 246, figs 6–7; 1978a: 133; 1978e: 28, fig. 11C–E.

Material

Saldanha Bay area. SAM–A5952, 240 m, 1 ♂.

False Bay area. SAM–A13843, 75 m, 1 ♂, 1 ovig. ♀. SAM–A13895, 87 m, 2 ovig. ♀. SAM–A17799, 75 m, 1 ♂, 2 ovig. ♀.

Agulhas Bank. SAM–A13772, 78 m, 1 ♂, 2 ovig. ♀, 2 juvs. SAM–A13773, 106 m, 2 ♂. SAM–A17800, 84 m, 1 ♂, 2 ♀, 3 juvs.

East London area. SAM–A17801, SM 179, 80 m, 1 ♂. SAM–A17802, SM 180, 80 m, 6 ♂, 1 ovig. ♀, 4 juvs.

Diagnosis

Integument with numerous small tubercles; 1 pair large conical tubercles on head; female with pair of large flattened submedian tubercles on pereonite 3; male and female with conical, posteriorly directed middorsal spine on fused pleonite 3. Epimera of pereonite 2 triangular, distally rounded, of pereonite 4 rectangular in female, with marginal denticulations, reduced in male. Pleotelson pentagonal, with strong subspinose lateral angle.

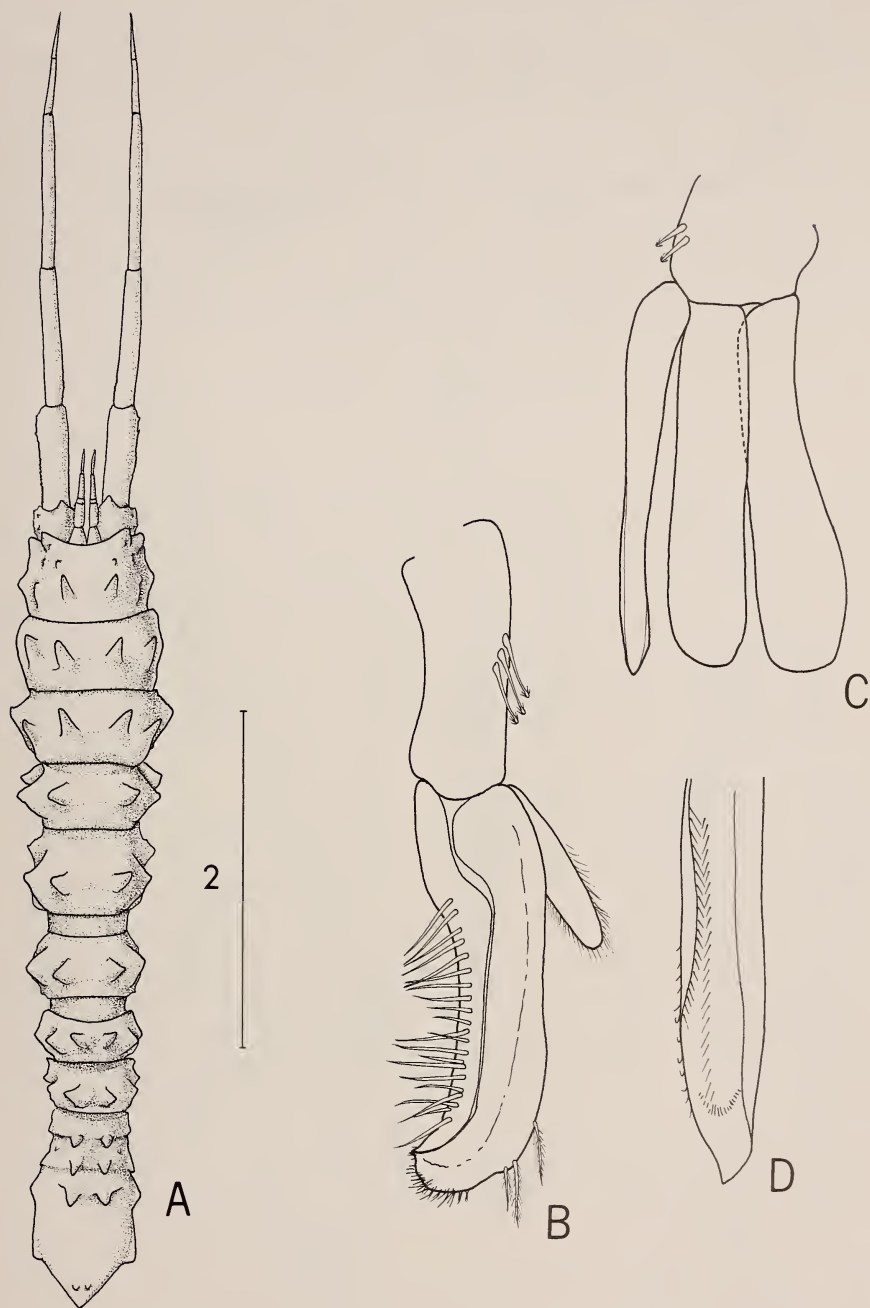


Fig. 12. *Microarcturus biserialis* Kensley A. Male, dorsal view. B. Pleopod 1 male. C. Pleopod 2 male. D. Apex of copulatory stylet. Scale = 2 mm.

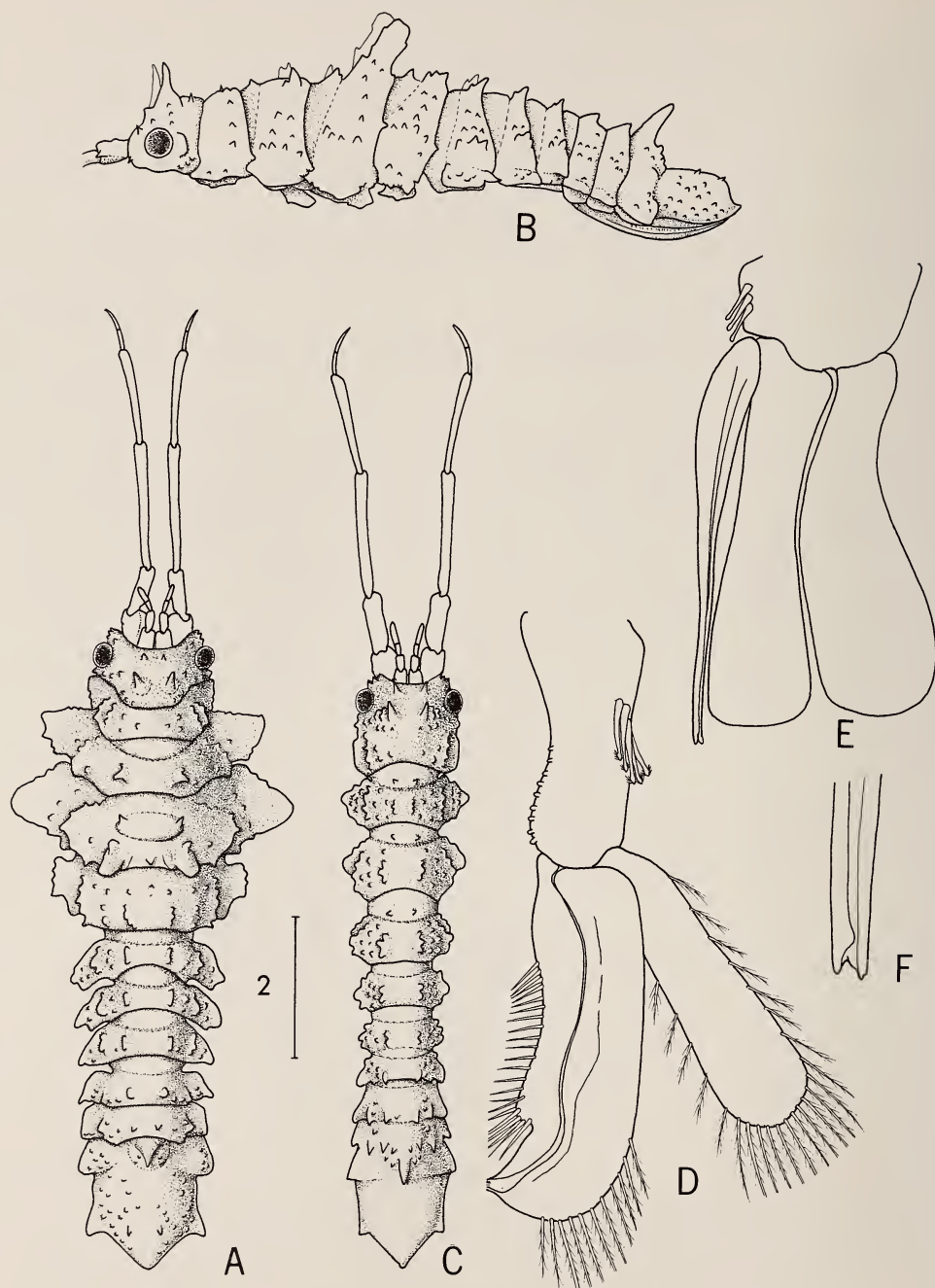


Fig. 13. *Microarcturus dayi* Kensley A. Female, dorsal view. B. Female, lateral view. C. Male, dorsal view. D. Pleopod 1 male. E. Pleopod 2 male. F. Apex of copulatory stylet. Scale = 2 mm.

Pleopod 1 ♂, exopod with distal margin bearing 11 plumose setae, very similar to *M. similis*; endopod subequal in length and width to exopod. Copulatory stylet an open gutter, with slight subterminal lobe.

Remarks

Microarcturus dayi and *M. quadriconus* have been taken from the same sample from False Bay.

The ornamentation of *M. dayi* bears some resemblance to *M. ornatus*, but the latter has more flattened dorsal tubercles, epimera 3–5 are semicircular in dorsal view, and both male and female lack a middorsal pleonal spine.

Microarcturus halei sp. nov.

Fig. 14

Material

Zululand to Transkei area. Holotype SAM-A17803, SM 103, 28°31'S 32°34'E, 680 m, 1 ovig. ♀, TL 5.8 mm. Paratypes SAM-A17804, SM 103, 680 m, 8 ♂, 3 ovig. ♀. Paratypes SAM-A17805, SM 250, 31°59'S 29°22'E, 150–200 m, 4 ♂, 4 ovig. ♀, 17 juvs. SAM-A17806, SM 123, 690 m, 2 ♂, 2 ovig. ♀. SAM-A17807, SM 109, 1 300 m, 1 ovig. ♀. SAM-A17808, SM 232, 560–620 m, 14 ♂, 4 ovig. ♀, 4 juvs. SAM-A17809, SM 226, 710–775 m, 11 ♂, 6 ovig. ♀, 20 juvs. USNM 189071, SM 250, 2 ♂, 2 ovig. ♀. USNM 189072, SM 103, 3 ♂, 1 ovig. ♀.

Diagnosis

Integumental ornamentation variable, either relatively smooth between large tubercles or with numerous fine acute granulations. Head with anterolateral corners acute; eyes large, weakly pigmented. Pereonite 2 with two or four elongate conical processes; occasionally, pereonites 2–3 each with four conical processes; epimera of pereonites 2–3 triangular, distally narrowly rounded to almost acute. Pereonites 5–7 subequal in length, decreasing in width posteriorly. Bases of pereopods 2–4 with two or three spinose processes on anterior margins; coxal processes acutely triangular. Three fused pleonites demarcated by shallow grooves; pleotelson pentagonal, with strong lateral angle or tooth; apically acute.

Pleopod 1 ♂, exopod with distal rounded margin bearing nine elongate plumose setae; groove opening on small curled lobe; with convex finely setulose distal lobe; endopod five-sixths length and about half width of exopod. Copulatory stylet stout, distally bilobed.

Remarks

The finely granulate form of *Microarcturus halei* has an integument similar to that of *M. hirticornis* (Monod) from the Antarctic, but differs markedly from this species in having fewer elongate dorsal processes, and in having a

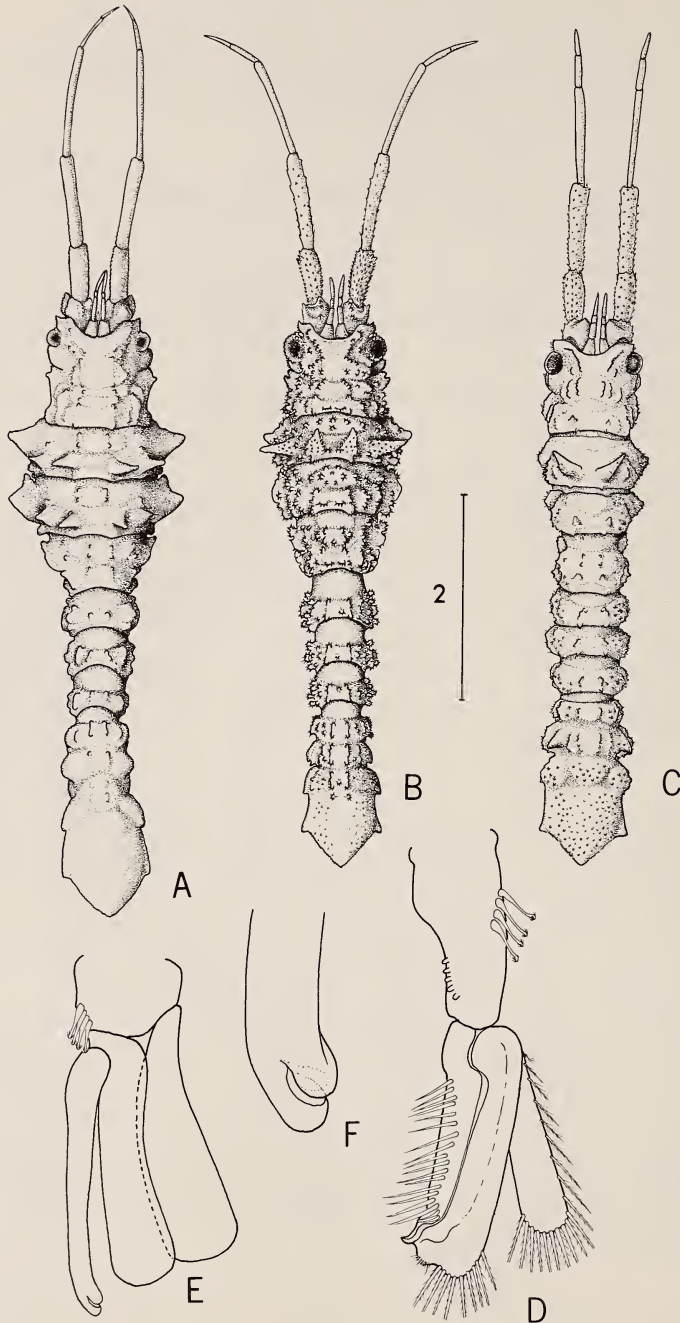


Fig. 14. *Microarcturus halei* sp. nov. A. Female, dorsal view. B. Female, dorsal view. C. Male, dorsal view. D. Pleopod 1 male. E. Pleopod 2 male. F. Apex of copulatory stylet. Scale = 2 mm.

posteriorly acute, rather than a bifid pleotelson. The arrangement of conical tubercles on the dorsum differs from any of the other South African species of *Microarcturus*.

Etymology

The species is named for the late H. M. Hale who contributed much valuable work to arcturid systematics.

Microarcturus laevis Kensley, 1975

Fig. 15

Microarcturus laevis Kensley, 1975a: 48, fig. 6; 1978e: 28, fig. 12A-B.

Material

False Bay. Holotype SAM-A13544, 75 m, 1 ovig. ♀. Paratype SAM-A13545, 48 m, 1 ovig. ♀. SAM-A13837, 66 m, 2 ♂, 1 ♀. SAM-A13852, 66 m, 11 ♂, 8 ovig. ♀, 4 ♀, 4 juvs. SAM-A13879, 81 m, 1 ♂.

Agulhas Bank. SAM-A13883, 78 m, 1 ♂.

Diagnosis

Integument smooth, occasionally very faintly pitted, lacking other ornamentation. Head with convex bulge between eyes, sometimes tending to be double, especially in males. Epimera of pereonites 2-4 rounded. Pereonites 2 and 3 with evenly convex submedian dorsal bulges. Pleotelson shield-shaped, apically acute, lacking distinct lateral angle; base of pleotelson with low rounded mid-dorsal convexity. Pleopod 1 ♂ with exopod distally rounded, with ten dorsal plumose setae; margin between end of groove and spine cluster on outer margin gently convex; endopod subequal in length and width to exopod. Copulatory stylet of pleopod 2 exopod distally simple, open, gutter-like.

Remarks

The rounded epimera of pereonites 2-4 and the lack of conical tubercles distinguishes this species from *M. quadriconus*, which it otherwise closely resembles.

Microarcturus longispinus sp. nov.

Fig. 16

Material

East London area. Holotype SAM-A17810, SM 226, 32°28'S 28°58'E, 710-775 m, 1 ovig. ♀, TL 6.2 mm. Allotype SAM-A17811, SM 228, 32°29'S 28°57'E, 650-700 m, 1 ♂, TL 6.5 mm. Paratypes USNM 189073, SM 250, 31°59'S 29°22'E, 150-200 m, 2 ♂, 1 ovig. ♀, 1 juv.

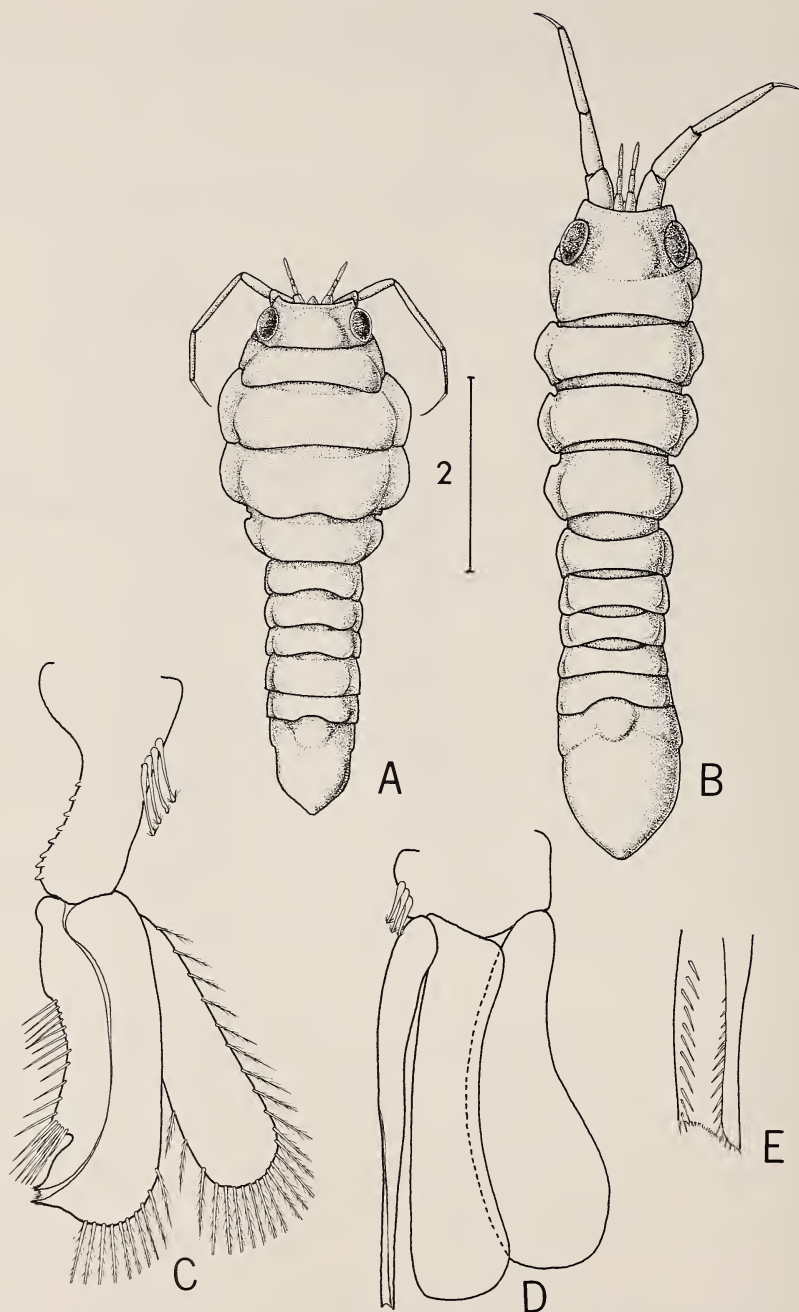


Fig. 15. *Microarcturus laevis* Kensley A. Female, dorsal view. B. Male, dorsal view. C. Pleopod 1 male. D. Pleopod 2 male. E. Apex of copulatory stylet. Scale = 2 mm.

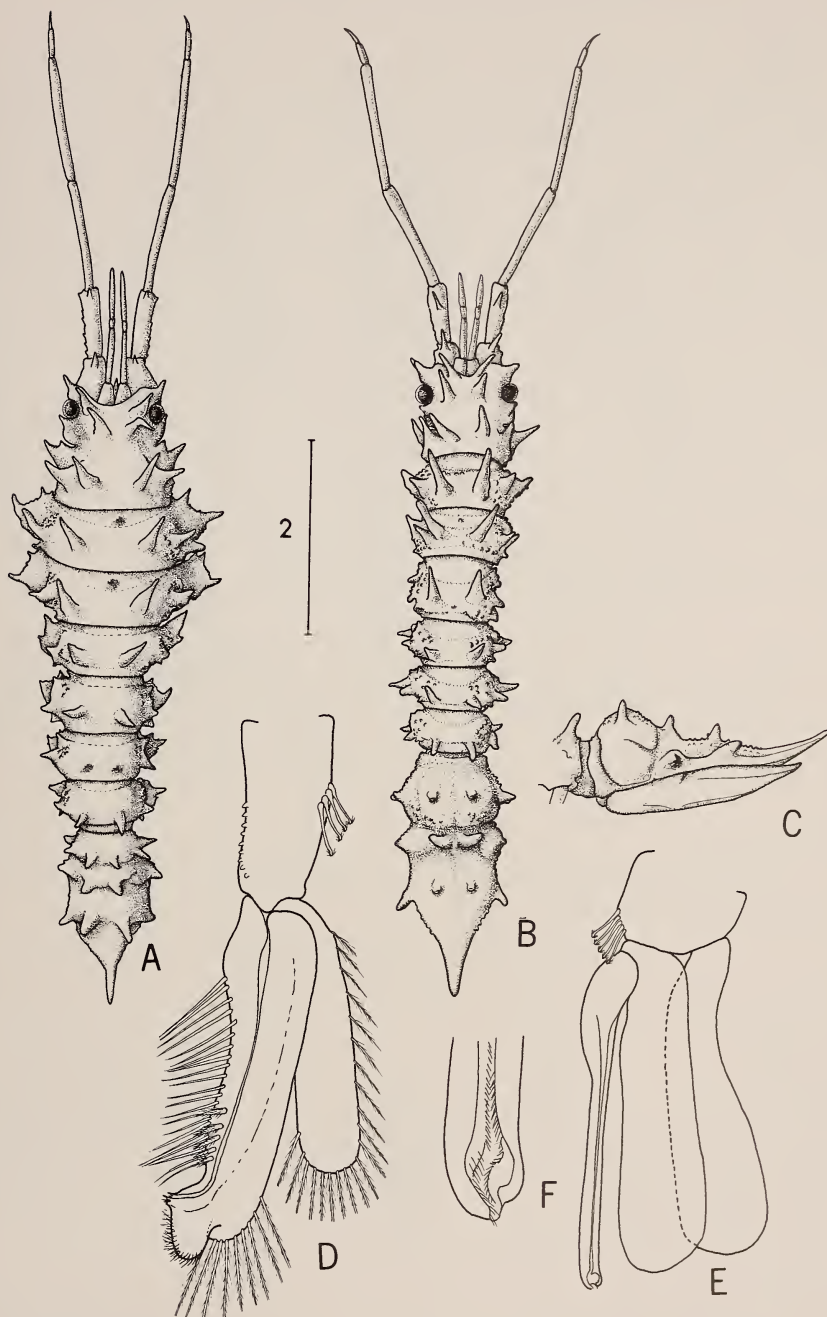


Fig. 16. *Microarcturus longispinus* sp. nov. A. Female, dorsal view. B. Male, dorsal view. C. Pleotelson, lateral view. D. Pleopod 1 male. E. Pleopod 2 male. F. Apex of copulatory stylet. Scale = 2 mm.

Diagnosis

Integument finely granulate. Eyes well pigmented. Male, head with two pairs of submedian conical processes; all pereonites with two pairs of elongate conical processes; second fused pleonite inflated, with six elongate processes; third fused pleonite with four elongate processes; pleotelson tapering posteriorly, dorsally flexed, acute, with one pair of submedian processes, lateral angle produced into elongate process. Female with pereonites 2–3 each with single anterior middorsal elongate process, epimera triangular, acute, with one or two small spines on anterior margin; epimeron of pereonite 4 truncate, with anterior spine. Male with bases of pereopods 5–6 with laterally directed spinose process; merus of pereopods 2–4 with distolateral spinose process. Female with pereopods 2–4 armed with spines on merus, ischium, basis, and coxa; coxal processes of pereopods 2–4 subcircular, increasing in size posteriorly; pereopods 5–6 with single spinose process on outer margin of basis. Pleopod 1 ♂, exopod with finely setulose lobe distal to end of groove elongate, rounded, extending beyond rounded distal margin; latter with nine elongate plumose setae; endopod three-fourths length and subequal in width to exopod. Copulatory stylet of pleopod 2 endopod with groove widening distally into hollowed area.

Remarks

Microarcturus longispinus resembles *M. rugosus* Nordenstam, 1933, in possessing elongate conical processes on the head, pereon, and pleon. The Antarctic species, however, has two elongate terminal pleotelsonic spines, unlike the single elongate posterior half of the pleotelson of the present species.

Etymology

The specific name is derived from the elongate spines on the head, pereon, and pleon seen in both the male and female.

Microarcturus nordenstami sp. nov.

Fig. 17

Material

East London area. Holotype SAM-A17812, SM 185, 33°39'S 27°11'E, 90 m, 1 ovig. ♀, TL 6.9 mm; allotype, 1 ♂, TL 5.4 mm. Paratypes SAM-A17813, SM 185, 90 m, 8 ♂, 8 ovig. ♀, 4 ♀, 9 juvs. Paratype SAM-A17814, SM 163, 33°04'S 28°06'E, 90 m, 1 ovig. ♀. Paratype SAM-A17815, SM 226, 32°28'S 28°58'E, 710–775 m, 1 ♂. Paratypes USNM 189074, SM 185, 90 m, 4 ♂, 4 ovig. ♀.

Diagnosis

Dorsolateral eyes large, well pigmented. Integument highly ornamented, with numerous rounded and acute granulate tubercles. Female with heavy granulate tripartite supraocular ridge. Pereonites 2–3 each with two strong

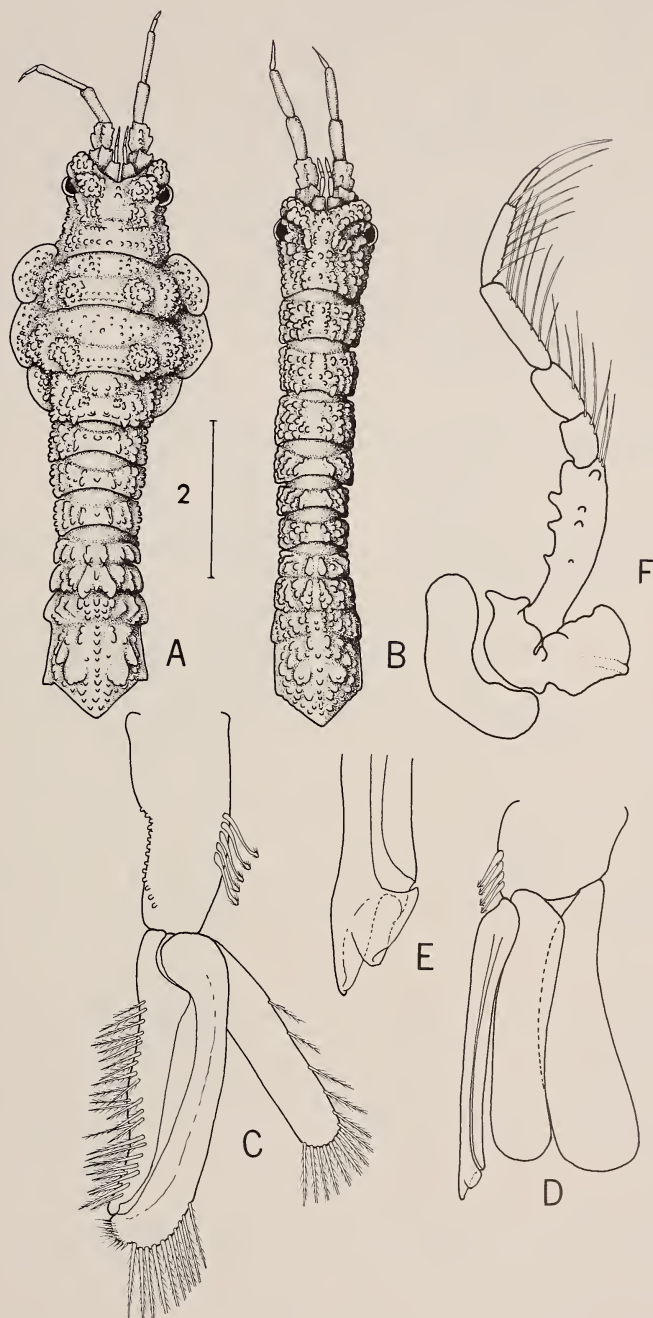


Fig. 17. *Microarcturus nordenstami* sp. nov. A. Female, dorsal view. B. Male, dorsal view. C. Pleopod 1 male. D. Pleopod 2 male. E. Apex of copulatory stylet. F. Pereopod 1. Scale = 2 mm.

submedian granulate bosses. Tubercles on anterior pleon becoming elongate; pleotelson with two strong acute submedian granulate bosses, strong lateral angle, apically acute. Male with strong granulate supraocular ridge, not markedly tripartite; submedian bosses on pleotelson not as large as in female. Epimera of pereonites 2–4 rounded in female. Pereopods 2–4 in female with bases armed with two rows of spinose tubercles; coxae expanded posteromedially over lateral marsupium into broad tuberculate structure. Pleopod 1 ♂ with distal margin rounded, with ten elongate plumose setae; gently rounded, finely setulose lobe between plumose setae and end of groove; endopod five-sixths length of and about half width of exopod. Copulatory stylet of pleopod 2 exopod tube-like, distally bilobed.

Remarks

See *Remarks* section at end of *M. barnardi*.

Etymology

The species is named for the late Dr A. Nordenstam who contributed much knowledge to isopod systematics.

Microarcturus ornatus Kensley, 1975

Fig. 18

Microarcturus ornatus Kensley, 1975a: 50, fig. 7; 1978a: 133; 1978e: 28, fig. 12C–E.

Material

Agulhas Bank. Holotype SAM–A13546, 200 m, 1 ovig. ♀; allotype, 1 ♂. Paratypes SAM–A13547, 200 m, 2 ♂.

Transkei. SAM–A17816, SM 228, 650–700 m, 5 ♂. SAM–A17817, SM 236, 660–670 m, 1 ♂. SAM–A17818, SM 250, 150–200 m, 6 ♂.

Diagnosis

Integument granular-tuberculate. Pereonites 2–4 in female with pair of submedian flattened and produced tubercles, and one pair smaller lateral tubercles; epimera of pereonite 2 semicircular, of pereonite 3 triangular. Pereonites 5–7 and pleonites 1–3 with short ridge-like tubercles. Male with large produced submedian pair of tubercles on pereonite 2 only. Pleonite 2 with strong apically acute ‘shoulders’, much less prominent in male than in female. Pereopods 2–4, coxae with acutely triangular, posteriorly directed process; bases armed with acute spinose processes on anterior margin in female only. Pereopods 5–7 with single spinose process on outer margin of bases in male and female. Pleopod 1 ♂ with distal margin convex, bearing ten elongate plumose setae; groove opening distally on somewhat convoluted, finely setulose lobe, separated by distinct cleft from distal setose lobe; endopod about five-sixths length and half width of exopod. Copulatory stylet of pleopod 2 endopod distally bilobed.

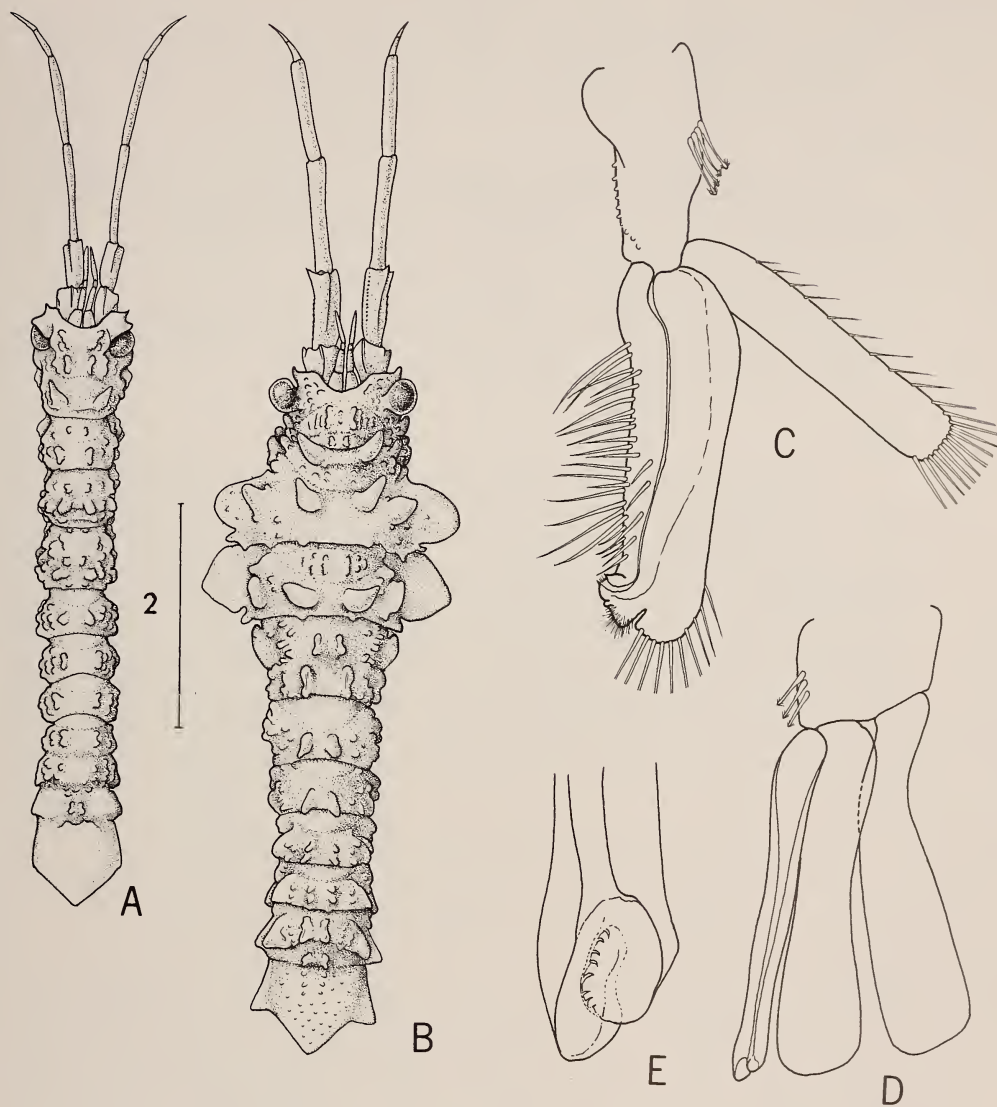


Fig. 18. *Microarcturus ornatus* Kensley A. Male, dorsal view. B. Female, dorsal view. C. Pleopod 1 male. D. Pleopod 2 male. E. Apex of copulatory stylet. Scale = 2 mm.

Microarcturus oudops (Barnard, 1914)

Fig. 19

Neoarcturus oudops Barnard, 1914: 214, pl. 28C, pl. 29B; 1920: 397; 1940: 508. Nordenstam, 1933: 115.

Microarcturus oudops: Kensley, 1978a: 130, fig. 3; 1978e: 28, fig. 13A.

Material

Cape Point area. Holotype SAM-A69, 1 510 m, 1 ♂, (damaged). SAM-A4070, 1 400 m, 16 ♂, 4 ovig. ♀, 1 ♀, 16 juvs. SAM-A14027, (no locality data), 2 ♂, 1 ovig. ♀, 2 juvs.

Zululand to Transkei area. SAM-A17819, SM 103, 680 m, 2 ♂, 4 ovig. ♀, 4 juvs. SAM-A17820, SM 129, 850 m, 4 ♂, 2 ovig. ♀, 1 juv. SAM-A17821, SM 226, 710–775 m, 7 ♂, 6 ovig. ♀. SAM-A17822, SM 228, 650–700 m, 5 ♂, 1 ovig. ♀. SAM-A17823, SM 236, 660–670 m, 1 ♂, 1 juv.

Diagnosis

Integument finely granulate. Head with rounded granular eyes lacking pigment or ommatidia. Pereonites 1–4 each with small anterior and large posterior transverse granulate ridge; epimera 2–4 in female shallowly triangular; coxal processes narrowly triangular, pereopods 2–4 unarmed. Pleonite 1 short, ridge-like; pleonite 3 somewhat inflated in male. Pleotelson with well-developed lateral angle in male, present or absent in female; posterior margin broadly angular to rounded. Pleopod 1 ♂, exopod with rounded distal margin bearing five plumose setae, divided by narrow cleft from elongate-rounded setulose lobe distal to end of groove; endopod slightly more than half length and half width of exopod, sparsely setose. Pleopod 2 ♂, copulatory stylet distally bilobed and convoluted.

Microarcturus quadriconus Kensley, 1975

Fig. 20

Microarcturus quadriconus Kensley, 1975a: 52, fig. 8; 1978e: 28, fig. 13B–C.

Material

False Bay. SAM-A13777, 31 m, 2 ♂. SAM-A13839, 53 m, 3 ♂, 1 ovig. ♀. SAM-A13848, 22 m, 1 juv. SAM-A13850, 33 m, 1 ♂, 4 ovig. ♀. SAM-A13873, 39 m, 1 ♂, 1 ovig. ♀, 3 juvs. SAM-A13875, 40 m, 1 ♂, 5 ovig. ♀. SAM-A13876, 39 m, 2 ovig. ♀. SAM-A13904, 75 m, 1 ovig. ♀. SAM-A13905, 40 m, 1 ovig. ♀, 1 juv. SAM-A17867, 3 ♂, 2 ovig. ♀, 1 ♀, 1 juv.

Agulhas Bank. Holotype SAM-A13548, 80 m, 1 ovig. ♀; allotype, 1 ♂. Paratypes SAM-A13549, 80 m, 2 ovig. ♀.

East London area. SAM-A17824, SM 179, 80 m, 2 ♂, 5 ovig. ♀. SAM-A17825, SM 180, 80 m, 8 ♂, 12 ovig. ♀, 1 ♀, 22 juvs.

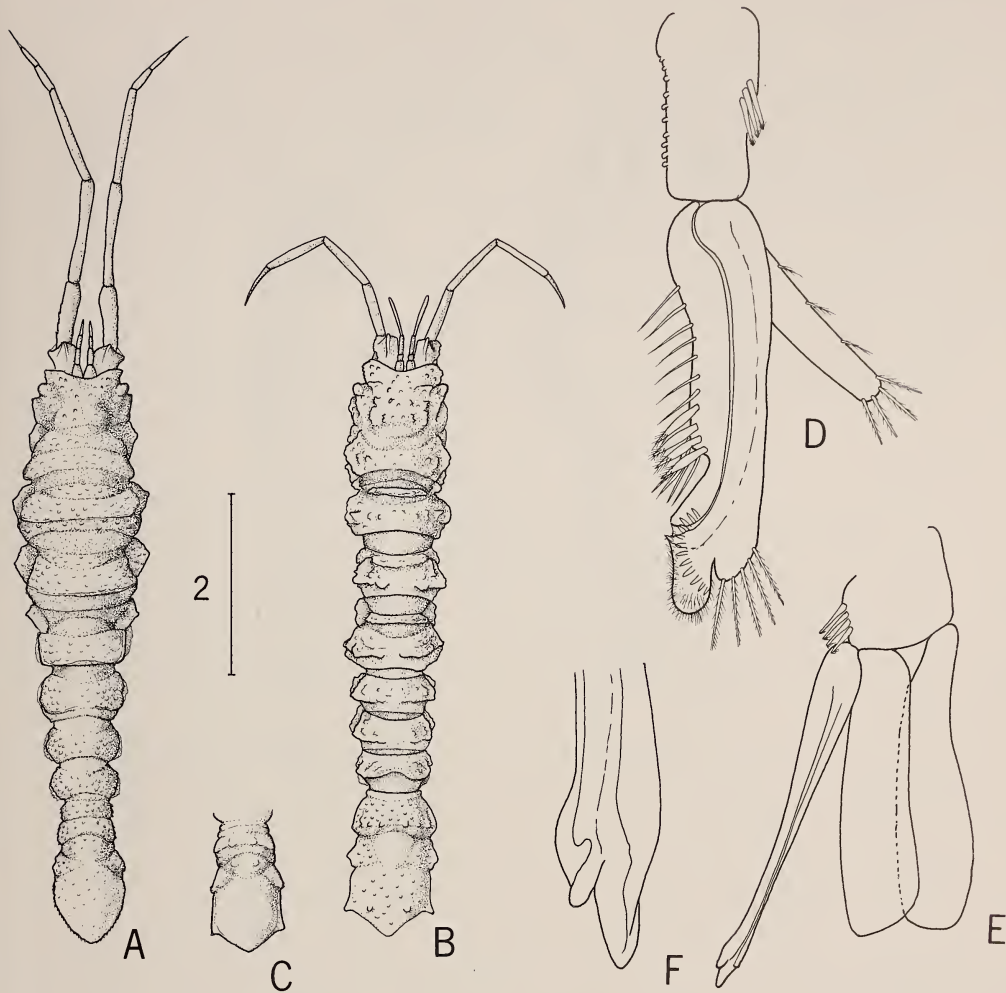


Fig. 19. *Microarcturus oudops* A. Female, dorsal view. B. Male, dorsal view. C. Pleotelson, dorsal view. D. Pleopod 1 male. E. Pleopod 2 male. F. Apex of copulatory stylet. Scale = 2 mm.

Diagnosis

Integument smooth, lacking scattered small tubercles; with low conical processes, two on head, four on pereonites 1–4 each, two on pereonite 5, becoming obsolete posteriorly; middorsal rounded tubercle at base of pleotelson. Epimera 2 and 3 triangular, subacute in male and female. Pleotelson pentagonal, lateral angles more marked in female than in male. Pleopod 1 ♂, exopod very similar to that of *Microarcturus similis* and *M. dayi*; endopod subequal in length and width to exopod. Copulatory stylet as in *M. similis* and *M. dayi*, apically simple.

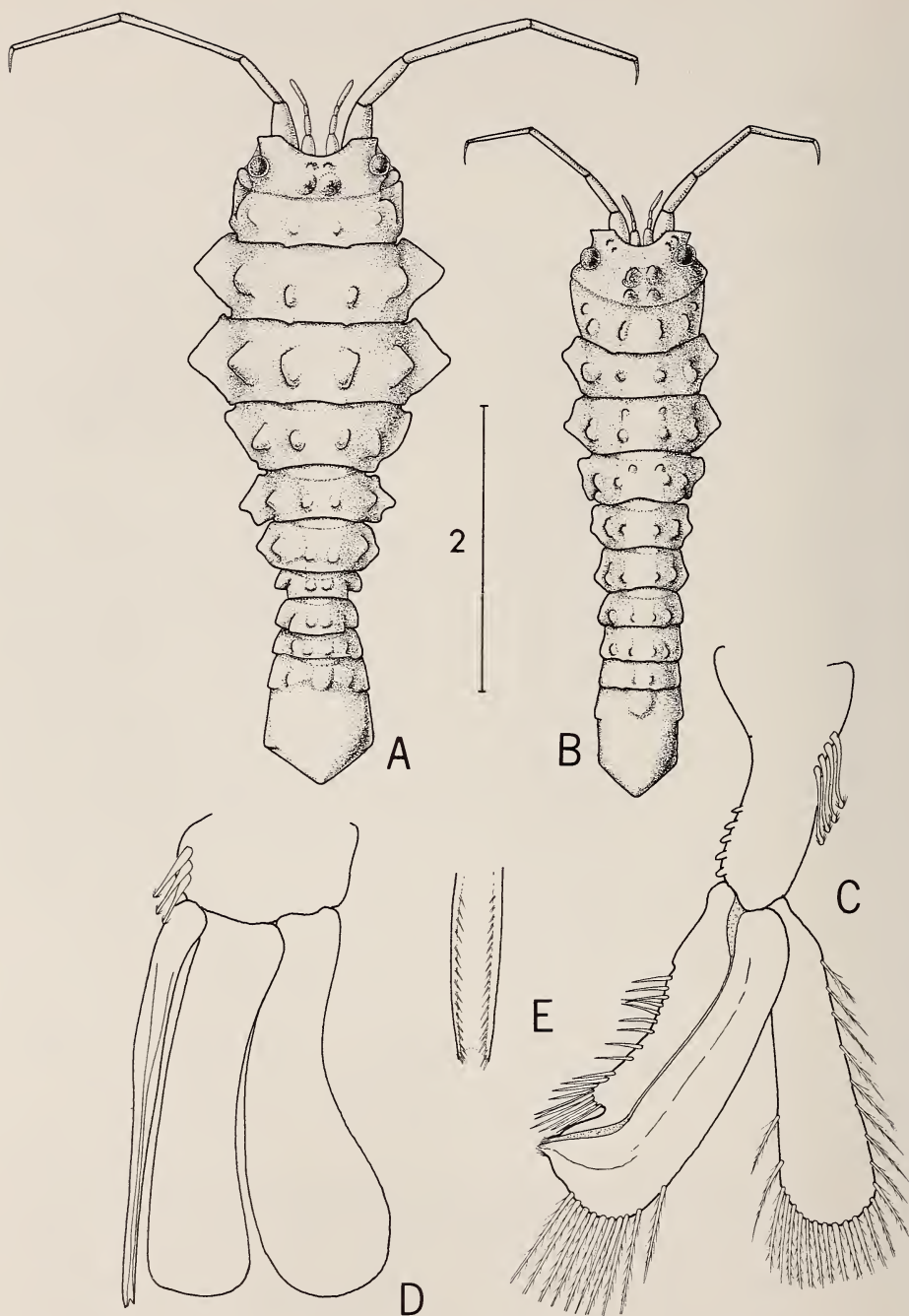


Fig. 20. *Microarcturus quadriconus* Kensley A. Female, dorsal view. B. Male, dorsal view.
 C. Pleopod 1 male. D. Pleopod 2 male. E. Apex of copulatory stylet. Scale = 2 mm.

Remarks

This species has been taken from twelve stations from False Bay to East London, sometimes co-occurring with *M. similis*. There is a possibility that this is another form of the variable *M. similis*, but even in the smoothest forms of the latter species there are always fairly strong submedian ridges. These have not been seen in *M. quadriconus*; similarly, strongly rounded and conical tubercles have not been noted in *M. similis*.

Microarcturus similis (Barnard, 1925)

Figs 21–22

Antarcturus similis Barnard, 1925: 395, fig. 1; 1940: 508.

Microarcturus similis: Nordenstam, 1933: 128. Kensley, 1975a: 47, figs 5a–b; 1978a: 133; 1978e: 31, fig. 13D–E.

Material

Lüderitz. SAM–A13902, 35 m, 3 ♂.

Saldanha Bay area. SAM–A13778, 15 m, 1 ♀. SAM–A13781, 44 m, 1 ♂, 1 ovig. ♀, 1 ♀, 8 juvs. SAM–A13782, 44 m, 2 ♂, 2 ovig. ♀, 1 ♀, 1 juv. SAM–A13863, 68 m, 1 ♂, 1 juv. SAM–A13864, 65 m, 6 ♂, 3 ovig. ♀, 3 ♀, 6 juvs. SAM–A13865, 78 m, 1 ♂, 1 ovig. ♀. SAM–A13866, 62 m, 3 ♂. SAM–A13867, 51 m, 1 ovig. ♀. SAM–A13868, 78 m, 1 ♂, 1 juv. SAM–A13869, 42–51 m, 26 ♂, 10 ovig. ♀, 8 ♀, 64 juvs. SAM–A13870, 71 m, 1 juv.

False Bay. SAM–A13776, 38 m, 1 ♂, 1 juv. SAM–A13769, 60 m, 3 ♂, 2 ovig. ♀. SAM–A13775, 75 m, 6 ♂, 2 ovig. ♀, 1 juv. SAM–A13838, 64 m, 1 ♂, 1 juv. SAM–A13840, 33 m, 1 ovig. ♀. SAM–A13841, 66 m, 4 ♂, 8 ovig. ♀, 3 ♀, 11 juvs. SAM–A13842, 71 m, 1 juv. SAM–A13844, 36 m, 1 ♂, 1 ♀. SAM–A13845, 42 m, 1 juv. SAM–A13846, 33 m, 1 ♂. SAM–A13847, 33 m, 5 ♂, 3 ovig. ♀. SAM–A13851, 36 m, 1 ♀. SAM–A13853, 53 m, 1 ♂. SAM–A13854, 60 m, 2 ♂, 1 ♀. SAM–A13855, 87 m, 1 ♂, 2 juvs. SAM–A13856, 73 m, 1 ♂. SAM–A13857, 87 m, 2 ♂, 1 ovig. ♀, 1 ♀, 5 juvs. SAM–A13858, 48 m, 4 ♂, 1 ovig. ♀, 3 juvs. SAM–A13859, 87 m, 23 ♂, 14 ovig. ♀, 8 ♀, 20 juvs. SAM–A13860, 31 m, 3 ♂, 2 ovig. ♀, 4 ♀. SAM–A13861, 1 ovig. ♀. SAM–A13862, 26 m, 1 ♂, 1 ovig. ♀. SAM–A13871, 68 m, 2 ♂, 1 juv. SAM–A13872, 40 m, 1 juv. SAM–A13874, 48 m, 1 juv. SAM–A13877, 41 m, 1 ♀. SAM–A13878, 68 m, 1 ovig. ♀, 1 juv. SAM–A13880, 31 m, 4 ♂, 1 ♀. SAM–A13881, 73 m, 1 ovig. ♀. SAM–A13882, 31 m, 1 ♀. SAM–A13896, 28 m, 1 ♂, 1 juv. SAM–A13897, 75 m, 19 ♂, 8 ovig. ♀, 4 ♀, 10 juvs. SAM–A13898, 1 ♀. SAM–A13903, 80 m, 1 ♂, 1 ♀, 1 juv. SAM–A17826, 87 m, 1 ♂, 1 juv. SAM–A17827, 66 m, 1 ♂. SAM–A17828, 40 m, 4 ♂, 4 ovig. ♀, 7 ♀, 5 juvs.

Agulhas Bank. Syntypes SAM–A5951, 84 m, 1 ovig. ♀, 1 ♀. SAM–A5953, 86 m, 1 ♂. SAM–A5954, 80 m, 2 ♀. SAM–A13765, 50 m, 1 ♂. SAM–A13766, 50 m, 1 ovig. ♀. SAM–A13767, 50 m, 1 ♀. SAM–A13884, 79 m, 3 ♂,

2 ovig. ♀. SAM-A13885, 49 m, 1 ovig. ♀, 1 juv. SAM-A13886, 44 m, 4 ♂, 4 ovig. ♀, 1 ♀. SAM-A13887, 73 m, 1 ♂, 1 juv. SAM-A13888, 48 m, 1 juv. SAM-A13889, 42 m, 4 ♂, 4 ovig. ♀, 2 ♀, 1 juv. SAM-A13890, 36 m, 1 ovig. ♀. SAM-A13891, 78 m, 2 juvs. SAM-A13892, 32 m, 2 ♀. SAM-A13893, 45 m, 1 ovig. ♀. SAM-A13894, 46 m, 1 ovig. ♀. SAM-A13901, 43 m, 1 ovig. ♀.

Diagnosis

Integumental sculpturing varying from very granular to almost smooth, in all cases with double submedian dorsal series of elongate ridge-like tubercles on head, pereonites, and three fused pleonites. Epimera of pereonites 2–4, especially in female, broadly triangular, subacute. Pleotelson pentagonal, with distinct lateral angle. Bases of pereopods 2–4 unarmed in male and female. Pleopod 1 ♂, exopod distally rounded, with nine plumose setae, area between setose distal margin and end of groove almost straight; endopod subequal in length and width to exopod. Copulatory stylet of pleopod 2 endopod distally simple, open, gutter-like.

Remarks

Barnard (1925) remarked on the superficial similarity of his species to *Arcurus simplicissimus* Whitelegge, 1904, but noted that the antennae differed markedly. *Arcurus stebbingi* Beddard, 1886, which Barnard also mentioned, is unmistakably an *Antarcturus*, with very elongate antennae, anterior 'horns' on the head, and strong submedian spines on the pleon, and bears little resemblance to *M. similis*.

Barnard's syntypic material of this species (SAM-A5951) is a mixture of two specimens of *M. similis* and several specimens of *M. dayi*, hence his remarks on the variability of the tubercles (1925: 396).

Microarcturus youngi Kensley, 1978

Fig. 23

Microarcturus youngi Kensley, 1978a: 131, fig. 4; 1978e: 31, fig. 13E–G.

Material

Zululand to Transkei area. Holotype SAM-A15465, SM 86, 550 m, 1 ovig. ♀, TL 5.8 mm; allotype, 1 ♂, TL 6.0 mm. Paratypes SAM-A15466, SM 103, 680 m, 8 ♂, 10 ♀, 37 juvs. Paratypes SAM-A17829, SM 86, 550 m, 12 ♂, 5 ♀, 3 ovig. ♀, 50 juvs. SAM-A17830, SM 123, 690 m, 1 ♂. SAM-A17831, SM 129, 850 m, 3 ♂, 2 juvs. SAM-A17832, SM 226, 710–775 m, 4 ♂, 2 ovig. ♀, 1 juv.

Diagnosis

Eyes well pigmented. Integumental sculpturing varying, especially in male, from relatively smooth to having small scattered granules. Epimera of pereonites 2–3 in female laterally rounded to bluntly triangular. Pereonites 2–3 with

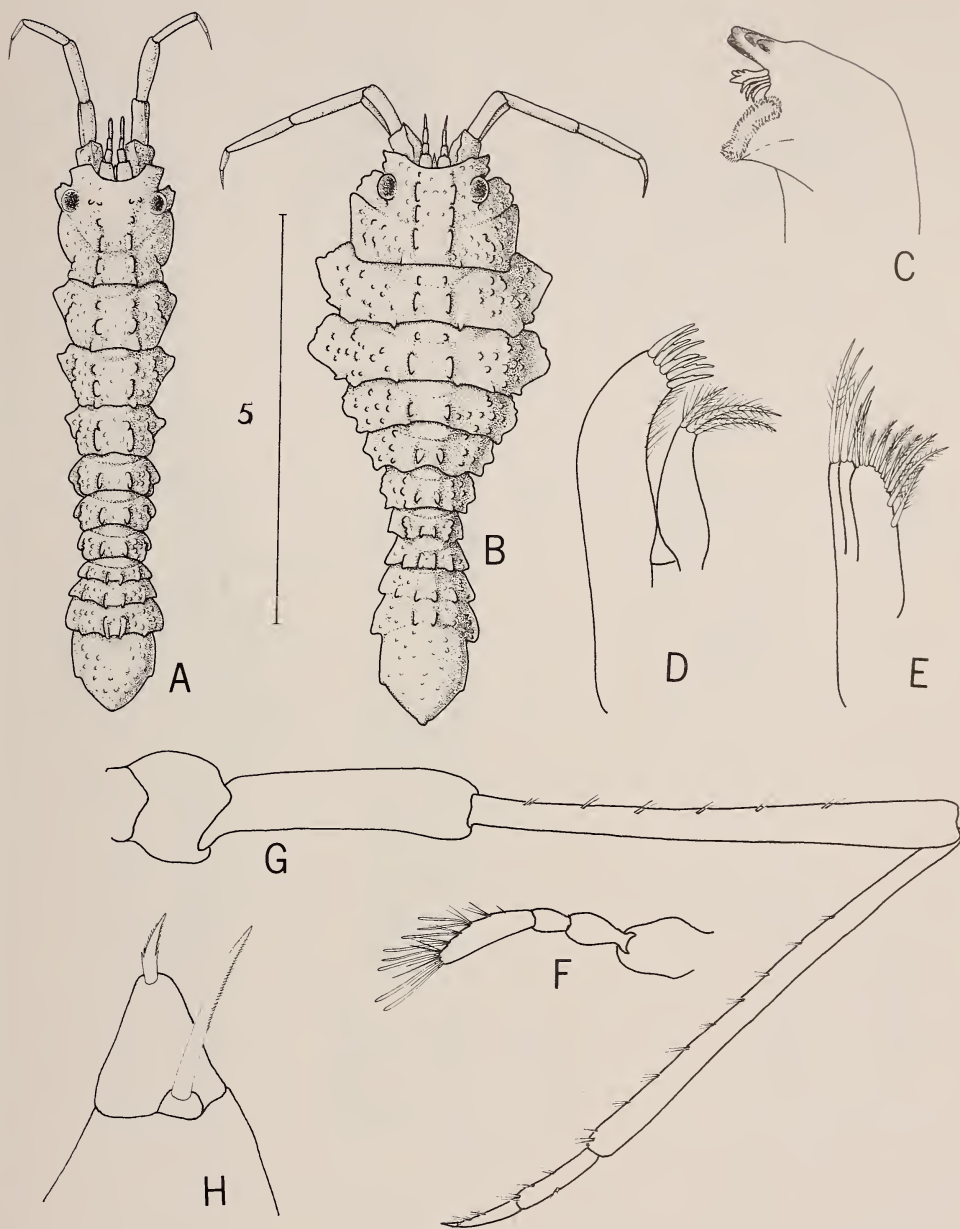


Fig. 21. *Microarcturus similis* (Barnard) A. Male, dorsal view. B. Female, dorsal view. C. Mandible. D. Maxilla 1. E. Maxilla 2. F. Antennule. G. Antenna. H. Uropodal rami. Scale = 5 mm.

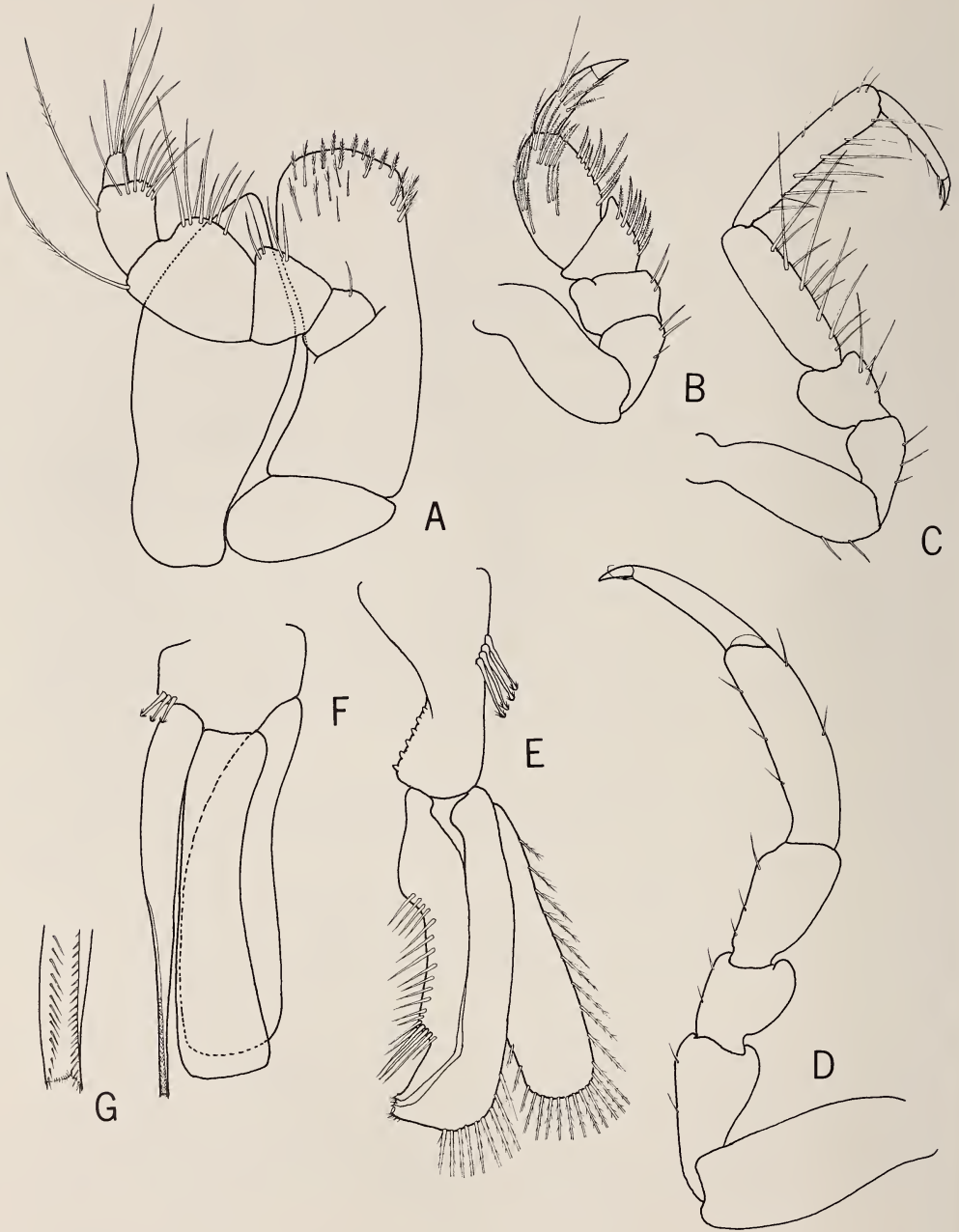


Fig. 22. *Microarcturus similis* (Barnard) A. Maxilliped. B. Pereopod 1. C. Pereopod 2. D. Pereopod 7. E. Pleopod 1 male. F. Pleopod 2 male. G. Apex of copulatory stylet.

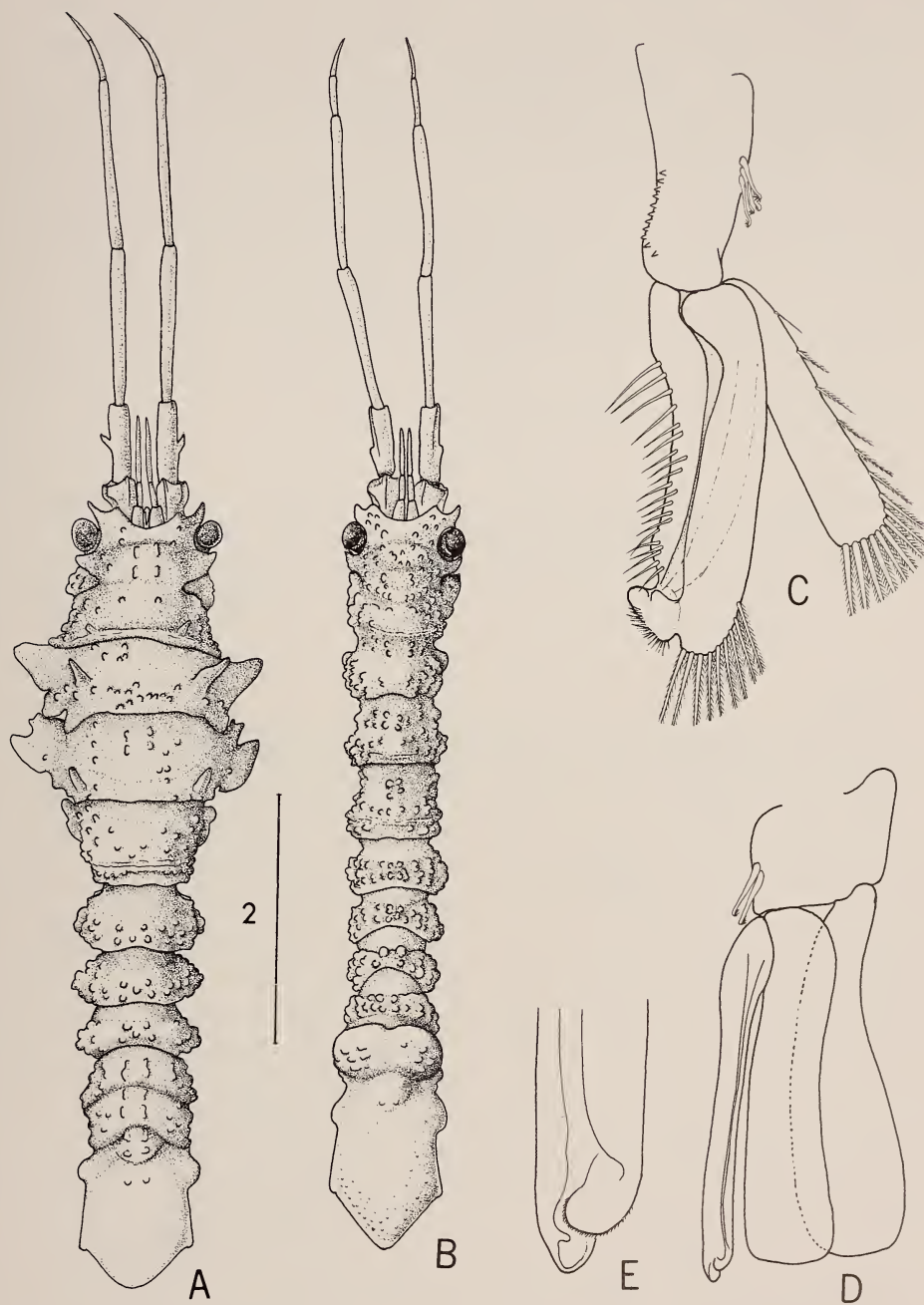


Fig. 23. *Microarcturus youngi* Kensley A. Female, dorsal view. B. Male, dorsal view. C. Pleopod 1 male. D. Pleopod 2 male. E. Apex of copulatory stylet. Scale = 2 mm.

dorsolateral tubercle sometimes spiniform. Pleotelson pentagonal, with distinct lateral angle; basal fused pleonite in male somewhat inflated, dorsally bipartite. Pleopod 1 in male, exopod distally rounded, with nine plumose setae, distinct notch between setae and distal lobe; endopod about two-thirds length of exopod. Copulatory stylet of pleopod 2 distally bilobed.

INFRAORDER FLABELLIFERA

Family **Cirolanidae**

Cirolana Leach, 1818

Cirolana anocula nom. nov.

Fig. 24

Cirolana caeca (non Dollfus, 1903), Kensley, 1978a: 141, figs 11–12.

Metacirolana caeca: Bruce, 1981: 954.

Material

Transkei. SAM-A17833, SM 123, 690 m, 2 ovig. ♀, 3 ♀, 3 juvs.
USNM 189075, SM 129, 850 m, 5 ♂, 5 ovig. ♀, 3 ♀, 6 juvs.

Previous records

Off Zululand, 750 m.

Remarks

Kensley (1978a) created a homonym for this species, being unaware of *Cirolana caeca* Dollfus, 1903, described from 1 200–2 368 m in the Mediterranean. This situation is corrected here. From Dollfus's description, *C. caeca*

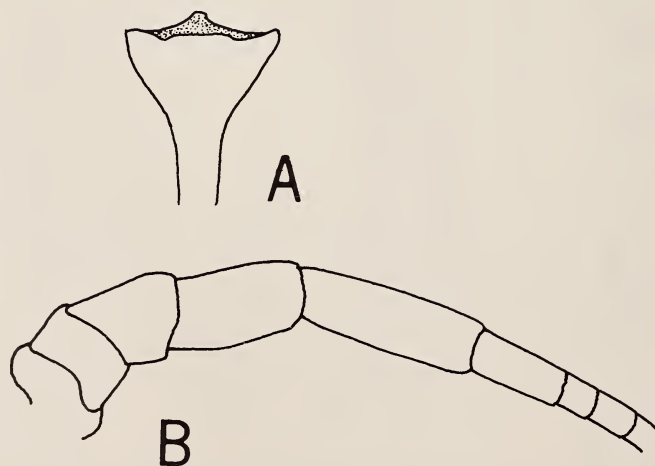


Fig. 24. *Cirolana anocula* nom. nov. A. Frontal lamina. B. Peduncle of antenna.

differs from *C. anocula* in having a narrow, longitudinally grooved frontal lamina, and in being a much larger species (TL ovig. ♀ 9,0 mm).

Bruce (1981) includes the present species in the genus *Metacirolana*. *Cirolana anocula*, however, does not agree entirely with the diagnosis of *Metacirolana* provided by Bruce (1981: 950). While the distally divergent frontal lamina and downward-projecting clypeus agree, the endopod of maxilla 1 is neither slender nor sparsely setose, while pleonite 5 lacks free lateral margins and is definitely overlapped by pleonite 4. All pleonite rami, except the endopod of pleopod 5, bear plumose setae, as is the case for both *Cirolana* and *Metacirolana*. For these reasons, the species is left in *Cirolana*.

The antenna, which was incorrectly figured in the original description, is again provided, along with the frontal lamina.

Cirolana bougaardti sp. nov.

Figs 25–26

Material

East London to Transkei area. Holotype SAM-A17834, SM 226, 32°28'S 28°58'E, 710–775 m, 1 ♂, TL 17,0 mm. Paratype SAM-A17835, SM 162, 32°55'S 28°31'E, 630 m, 1 ♂, TL 11,0 mm.

Description

Male

Body about three times longer than wide, dorsally strongly convex. Integument faintly pitted. Head with anterior margin evenly rounded, posteriorly immersed in pereonite 1. Frontal lamina basally narrow, distally dilated, rounded. Clypeus transversely narrowly rectangular. Eyes absent. Pereonite 1 with incomplete dorsolateral incised line in anterior half; pereonites 2–7 with complete incised line across anterior half of dorsum. Coxae of pereonites 2–4 posteroventrally rounded, becoming produced posteriorly; coxa of pereonite 5 subacute, of pereonites 6 and 7 acute. Short rounded submedian penial processes on pereonite 7. Pleonites 1–3 with acute posteroventral angle, pleonite 3 laterally overlapping pleonite 4; pleonite 5 lacking free lateral margins, overlapped by pleonite 4. Pleotelson posteriorly evenly rounded, dorsally gently convex, posterior margin setose.

Antennule reaching posteriorly to middle of pereonite 1; article 3 of peduncle longer than articles 1 and 2 together; flagellum of twelve articles. Antenna reaching posteriorly to pereonite 3; peduncle article 5 longest; flagellum of about twenty-eight articles. Mandibular palp with article 2 longest, armed with cluster of simple and fringed spines distally; article 3 strongly curved, with inner margin bearing row of spines, becoming distally longer; incisor of three sclerotized cusps; spine row of about thirteen spines; molar with about twenty-eight teeth. Maxilla 1, outer ramus with twelve distal spines, inner ramus with three stout plumose setae. Maxilla 2, inner ramus with numerous simple and fringed

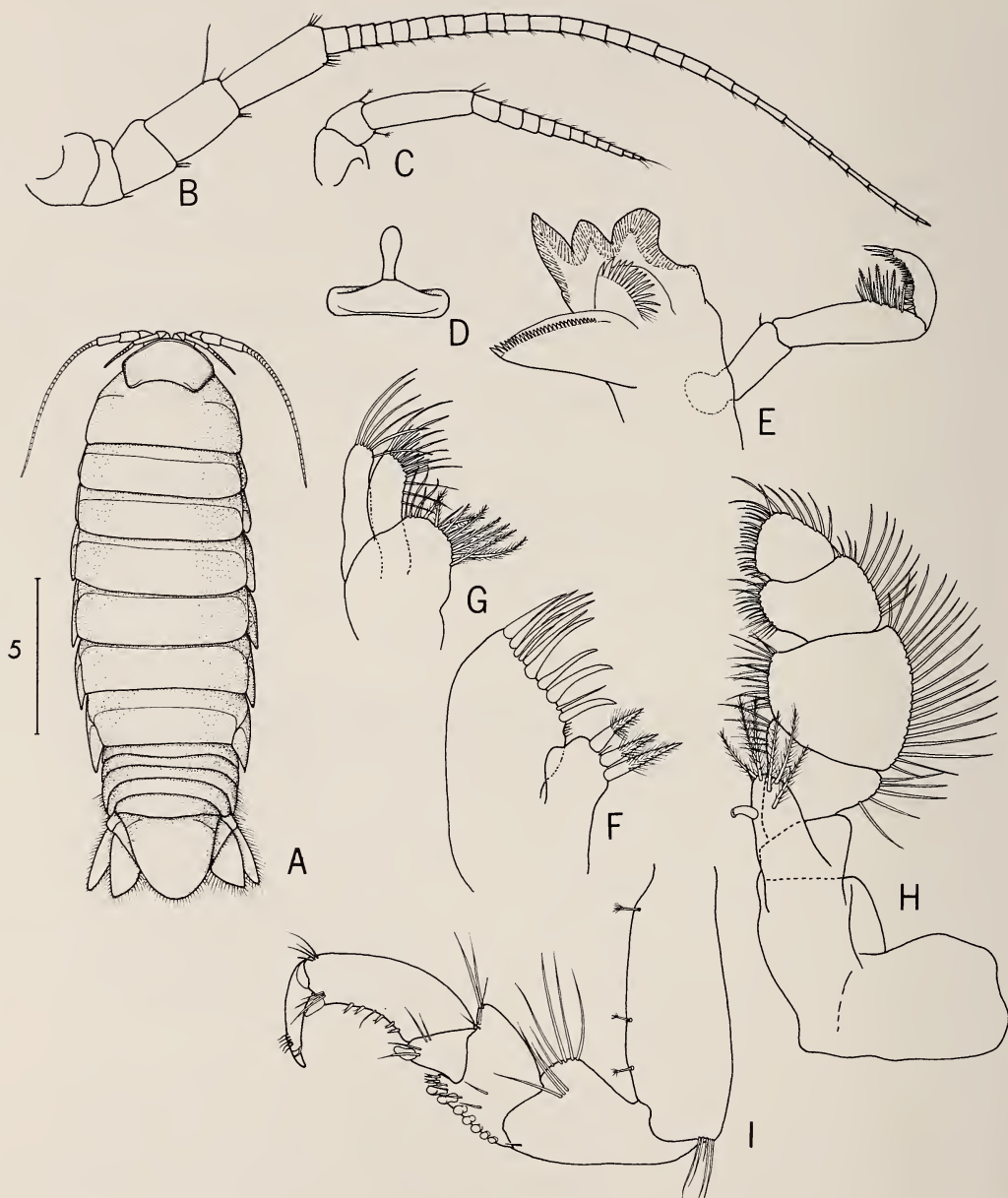


Fig. 25. *Cirolana bougaardti* sp. nov. A. Holotype male, dorsal view. B. Antenna. C. Antennule. D. Frontal lamina and clypeus. E. Mandible. F. Maxilla 1. G. Maxilla 2. H. Maxilliped. I. Pereopod 1. Scale = 5 mm.

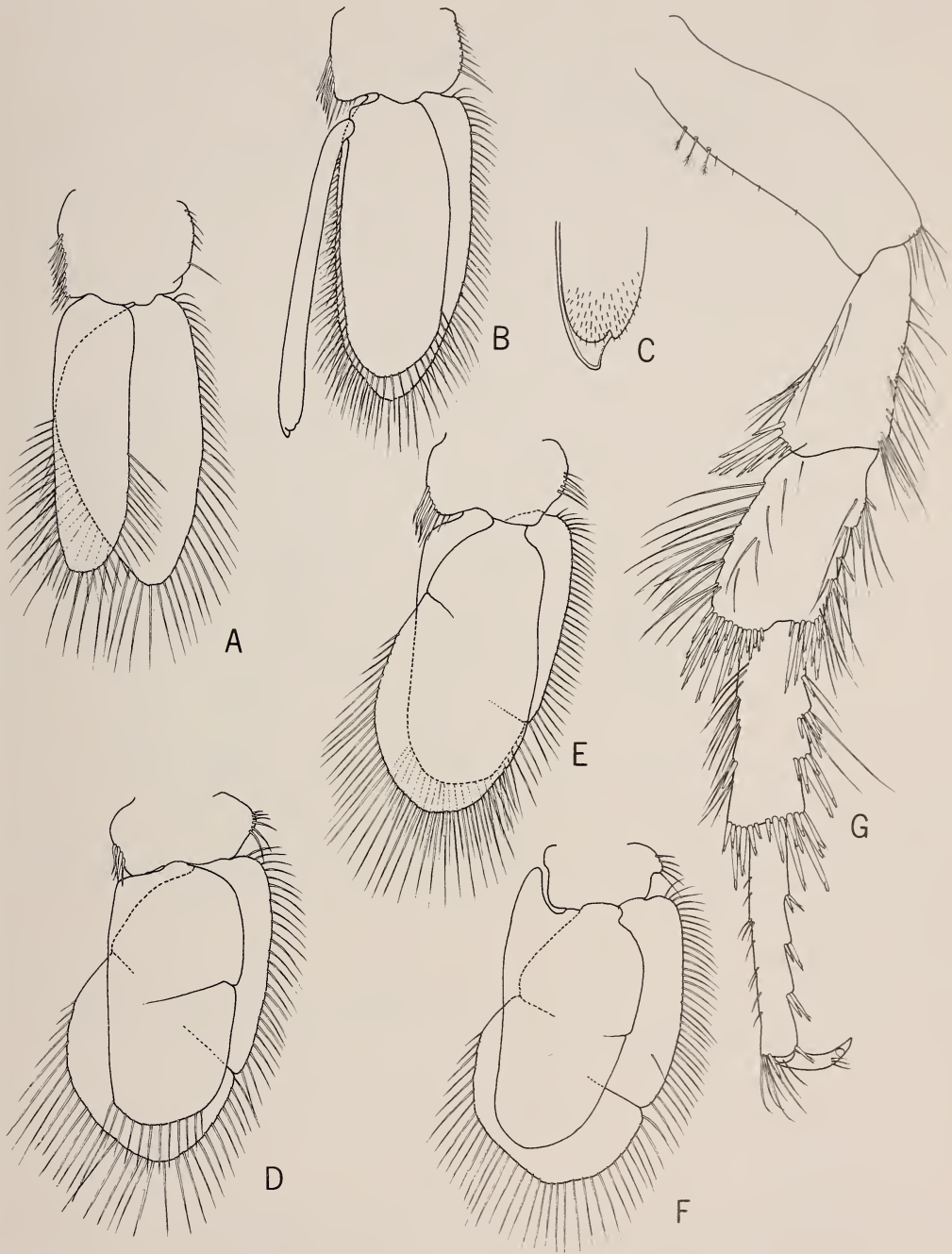


Fig. 26. *Cirolana bougaardii* sp. nov. A. Pleopod 1. B. Pleopod 2 male. C. Apex of copulatory stylet. D. Pleopod 3. E. Pleopod 4. F. Pleopod 5. G. Pereopod 7.

spines on mediodistal margin; inner lobe of outer ramus with dense cluster of short and long spines; outer lobe with six elongate spines. Maxilliped endite with single coupling hook, six fringed setae distally; palp with elongate setae on outer margins of all five articles; shorter setae on medial margins of four distal articles, article 3 broadest and longest. Pereopods 1–3 shorter than following legs, prehensile, with curved propodi bearing strong blunt posterodistal spine and few short sensory spines on posterior margin; carpus short, triangular, with single strong blunt posterodistal spine; merus with setose/spinose distodorsal lobe, row of stout rounded peg-like spines along posterior margin; ischium distally expanded. Pereopods 4–7 elongate, ambulatory; propodus straight, rectangular, with three clusters of sensory spines on posterior margin; carpus triangular, bearing elongate setae on anterior margin, clumps of sensory spines on posterior margin, and row of short and long spines on distal margin; merus with anterior setae, posterior setae and spines, clumps of short and long sensory spines at anterodistal and posterodistal corners; ischium with clumps of spines on anterodistal corner. Pleopods with all rami except endopod of pleopod 5 bearing marginal plumose setae. Pleopod 1, endopod half width of exopod, subequal in length. Pleopod 2 with copulatory stylet articulating basally on endopod, rod-like, reaching well beyond rami, distally lobed; endopod slightly narrower and shorter than exopod. Pleopods 3–5 with exopod becoming distally more broadly rounded. Uropodal basis produced along medial margin of endopod; laterally distally broadened, apically narrowly rounded; exopod about half width, subequal in length to endopod, distally narrowly rounded.

Remarks

Of the very few blind deep-sea species of *Cirolana* recorded, *C. bougaardti* most closely resembles *C. californiensis* Schultz, 1966, from 812 m in the Coronado Canyon off southern California. The American species differs from the South African species in the posteriorly acute pleotelson, lack of a dorsal incised line on the pereonites, in the very short antennule, the distally acute frontal lamina, as well as in several details in the mouth-parts.

Etymology

The species is named for Michael Bougaardt, in thanks for his assistance both on the *Meiring Naude* cruises and in the Department of Marine Biology at the South African Museum.

***Cirolana convexissima* sp. nov.**

Figs 27–28

Material

Transkei area. Holotype SAM–A17836, SM 250, 31°59'S 29°22'E, 150–200 m, 1 ovig. ♀, TL 3,3 mm. Paratypes SAM–A17837, SM 250, 150–200 m, 1 ♂, TL 2,6 mm, 4 juvs. Paratypes USNM 189076, SM 250, 150–200 m, 1 ♂, TL 2,6 mm, 1 ovig. ♀, TL 3,3 mm, 3 juvs.

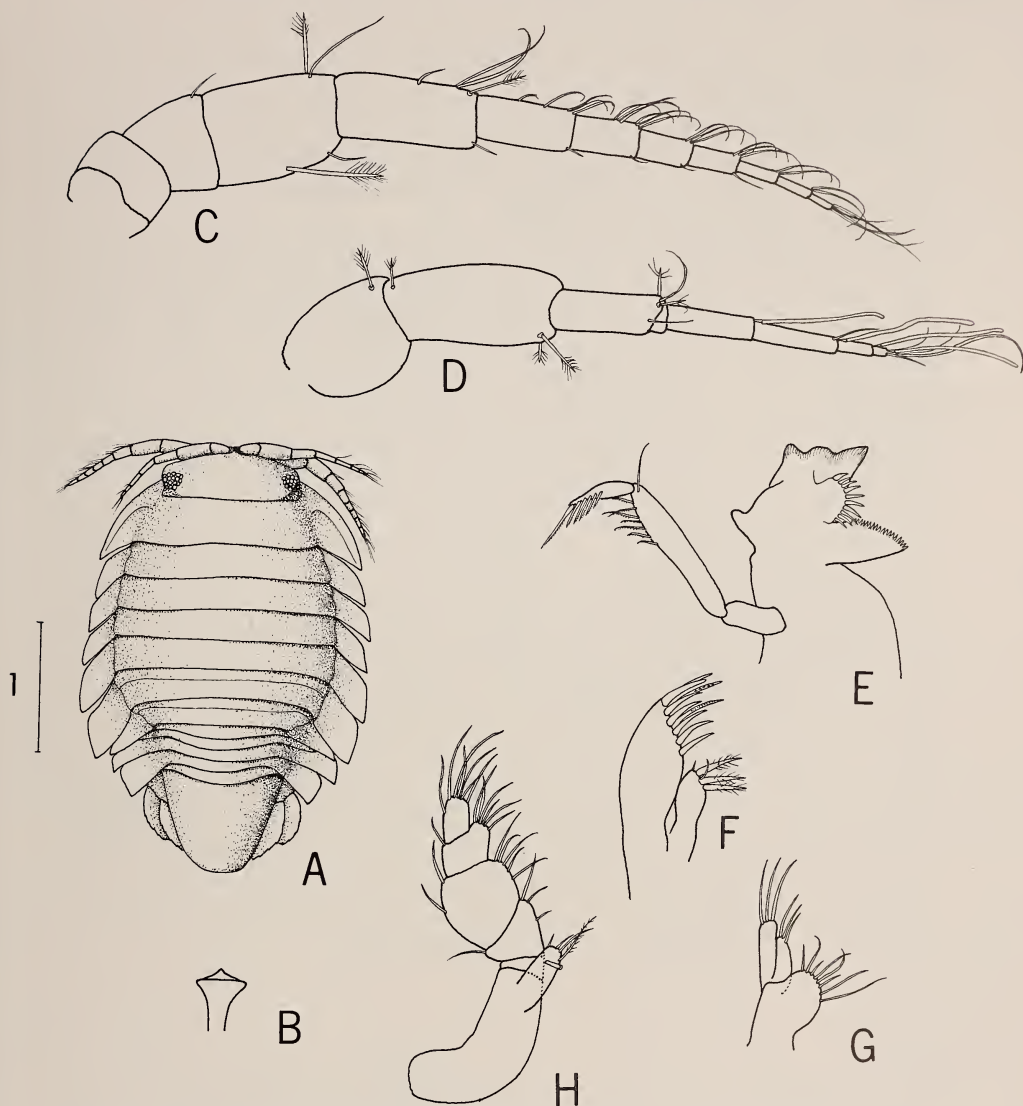


Fig. 27. *Cirolana convexissima* sp. nov. A. Male, dorsal view. B. Frontal lamina. C. Antenna. D. Antennule. E. Mandible. F. Maxilla 1. G. Maxilla 2. H. Maxilliped. Scale = 1 mm.

Description

Male

Body dorsally strongly convex, widest at pereonite 5. Head with tiny rostral point, only partially immersed in pereonite 1; with relatively well-pigmented eyes. Frontal lamina distally dilated, basally narrow. Coxae of pereonites

posteriorly acute; coxa 1 with curved incised dorsal line; coxa 6 broad, rectangular, overlapping narrow coxa 7. Pereonites 6 and 7 with transverse incised line in anterior half across dorsum. Pleonite 1 with very short acute lateral margin wedged between coxa 7 and more elongate acute lateral margin of pleonite 2; lateral margin of pleonite 3 contiguous with coxa 7, half width of lateral margin of pleonite 4; pleonite 5 lacking free lateral margin. Pleotelsonic margin entire, posteriorly broadly and evenly rounded.

Antennule with article 2 longer than both article 1 or 3; flagellum of five articles, four distal articles each with single aesthetasc. Antenna with three basal peduncle articles together equal to article 4; flagellum of seven articles. Mandibular palp with article 2 almost three times length of article 1, with seven finely serrate spines distally; article 3 with six serrate spines; incisor of three cusps; spine row with ten spines. Maxilla 1, inner ramus with three stout fringed setae; outer ramus with nine simple and serrate spines. Maxilla 2, inner ramus with eight setae on rounded mediodistal margin, lobes of outer ramus each with three distal spines. Maxilliped with palp article 2 longest and broadest; setae on mediodistal corners of articles 2–5; endite with one retinaculum and four distal setae. Pereopods 1–3 similar, with propodus robust and somewhat curved. Pereopod 1, propodus with three sensory spines on posterior margin; carpus with one posterodistal spine; merus with three spines; ischium with single posterodistal spine. Pereopod 2, propodus with five sensory spines on posterior margin; merus produced distodorsally into triangular lobe bearing three stout spines. Pereopods 4–7 with propodi elongate-rectangular; clumps of sensory spines, at dorsodistal and posterodistal corner of propodi, carpi, meri, and ischia. Pleopods with all rami except endopod of pleopod 5 bearing plumose marginal setae. Pleopod 2, copulatory stylet articulating subbasally on endopod, reaching by half its length beyond rami, apically narrowly acute; exopods of pleopods 4 and 5 clearly biarticulate. Uropodal basis produced into triangular lobe along medial margin of endopod; latter broadly oval, with marginal setae; exopod three-fourths length and half width of exopod.

Remarks

The present species bears a close resemblance to *Cirolana anocula* (see p. 260), especially in overall body shape and proportions. Numerous differences, however, make separation of the two species easy, but also suggest that *C. anocula* may be a closely related species to, or even a sister-species of, *C. convexissima*, the former having found an ecological niche at greater depths and, in so doing, lost its eyes.

These afore-mentioned differences lie in the eyes (present in *C. convexissima*, absent in *C. anocula*), uropodal shape; incised lines on pereonites 6 and 7 in *C. convexissima*, coxal shape, and pleotelsonic shape. As with *C. anocula*, the frontal lamina and clypeus agree with Bruce's diagnosis of *Metacirolana*, but pleonite 5 does not have free lateral margins, and is overlapped by pleonite 4.

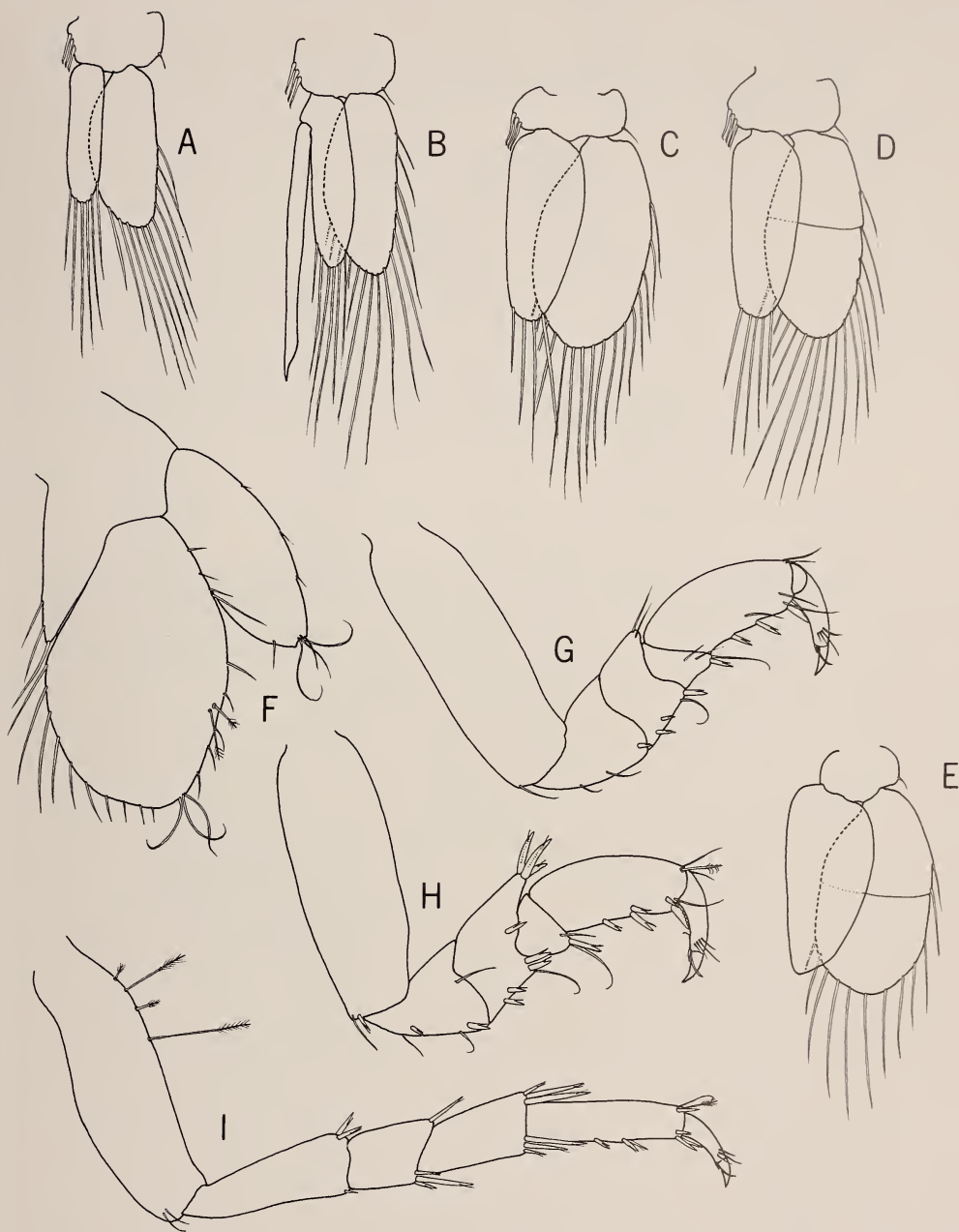


Fig. 28. *Cirolana convexissima* sp. nov. A. Pleopod 1. B. Pleopod 2 male. C. Pleopod 3. D. Pleopod 4. E. Pleopod 5. F. Uropod. G. Pereopod 1. H. Pereopod 2. I. Pereopod 7.

Etymology

The specific name, from the Latin meaning very convex or arched, refers to the strongly convex dorsum of the animal.

Family **Sphaeromatidae**

Subfamily Sphaeromatinae

Paracilicaea Stebbing, 1910*Paracilicaea cordylina* sp. nov.

Figs 29–30

Material

Zululand. Holotype SAM-A17838, SM 15, 27°31'S 32°45'E, 280–454 m, 1 ♂, TL 14,5 mm. (Fragment consisting of left uropod and part of pleotelson taken from same station.)

*Description**Male*

Body dorsally strongly arched, parallel-sided. Integument indurate, anteriorly shallowly pitted, becoming finely granulate posteriorly. Head anteriorly convex, with strongly pigmented lateral eyes; frontal lamina distally triangular, proximally having two rounded divergent lobes. Pereonite 1 longer than following segments, with broad ventrolateral extension, anteriorly with narrowly rounded lobe, posteriorly acute. Pereonites 2–7 subequal in length and width; coxae 2 and 3 triangular, apically subacute; coxae 4–7 rounded, becoming shorter and broader posteriorly. Pereonites 6 and 7 each with two pairs low granular tubercles close to posterior margin; pereonite 7 posterior margin faintly bilobed. Pleonites 1–4 fused medially, pleonite 1 visible only as arc-shaped segment posterodorsal to coxa 7; pleonite 3 with single granular tubercle on posterior margin; pleonite 4 with two strong conical submedian tubercles near posterior margin, laterally with bilobed granular tubercle just mesial to rounded lateral margin. Pleotelson strongly convex, with proximal half raised into two low granular tubercles and two stronger conical tubercles at about midlength; posterior margin with shallow terminal notch flanked by low rounded tubercle.

Antennule with basal article longest and widest, distal three-fourths flexed at right angle to basal part, with faint tubercle on anterior margin; article 2 slightly more than one-third length of slender cylindrical article 3; flagellum of eighteen articles. Antenna, basal article short, rounded; articles 2 and 3 subequal in length, shorter than article 4; articles 4 and 5 subequal in length; flagellum of seventeen articles. Mandible, incisor semicircular along blunt cutting edge, strongly sclerotized; lacinia distally broadened, of three blunt cusps; five strong spines in spine row; molar stout, truncate, fringed with dense band of short spines; palp with article 1 subequal in length to article 2, latter bearing row of twelve spines distally; article 3 curved, armed with row of sixteen short and

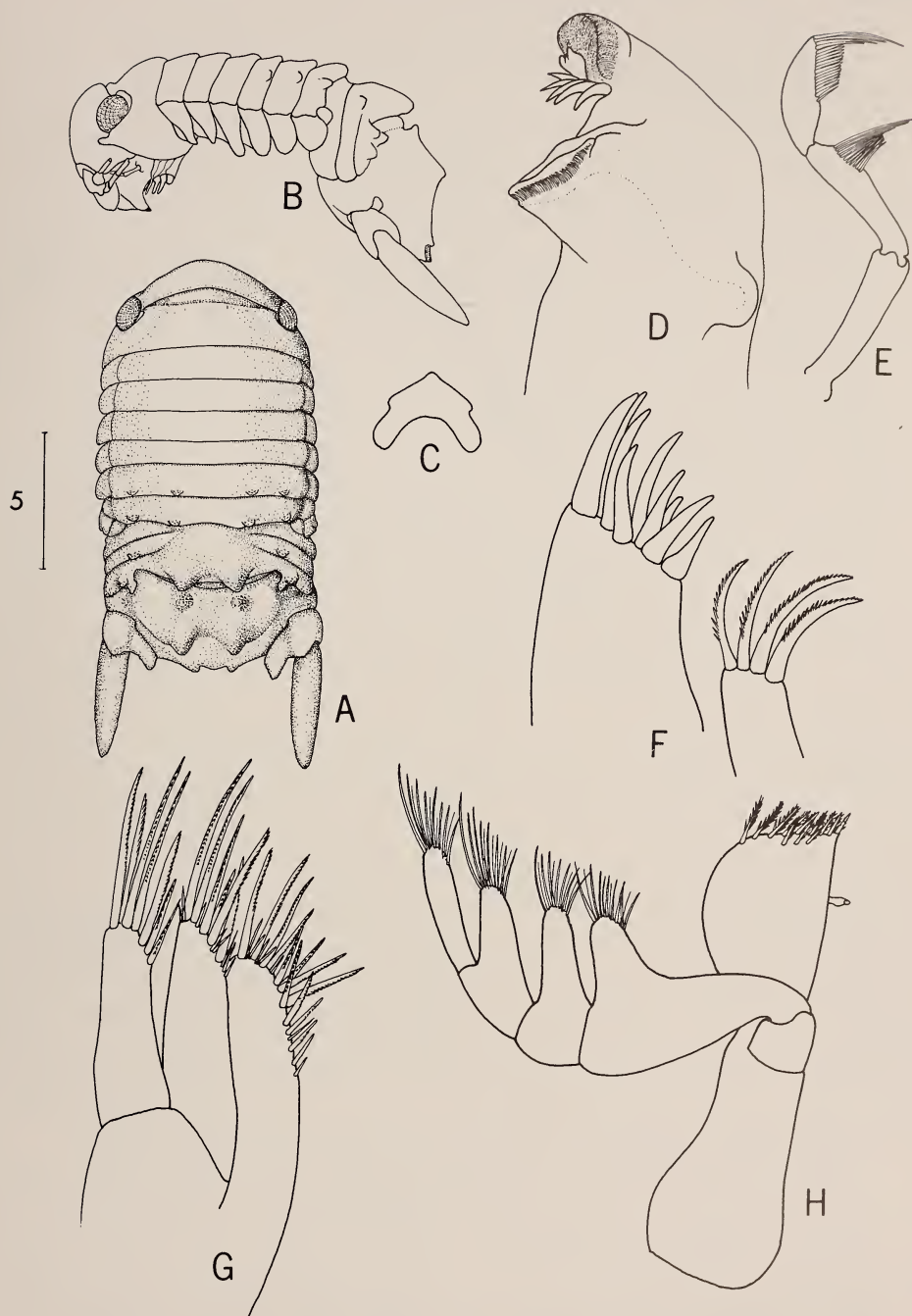


Fig. 29. *Paracilicaea cordylina* sp. nov. A. Holotype, dorsal view. B. Holotype, lateral view. C. Frontal lamina. D. Mandible. E. Mandibular palp. F. Maxilla 1. G. Maxilla 2. H. Maxilliped. Scale = 5 mm.

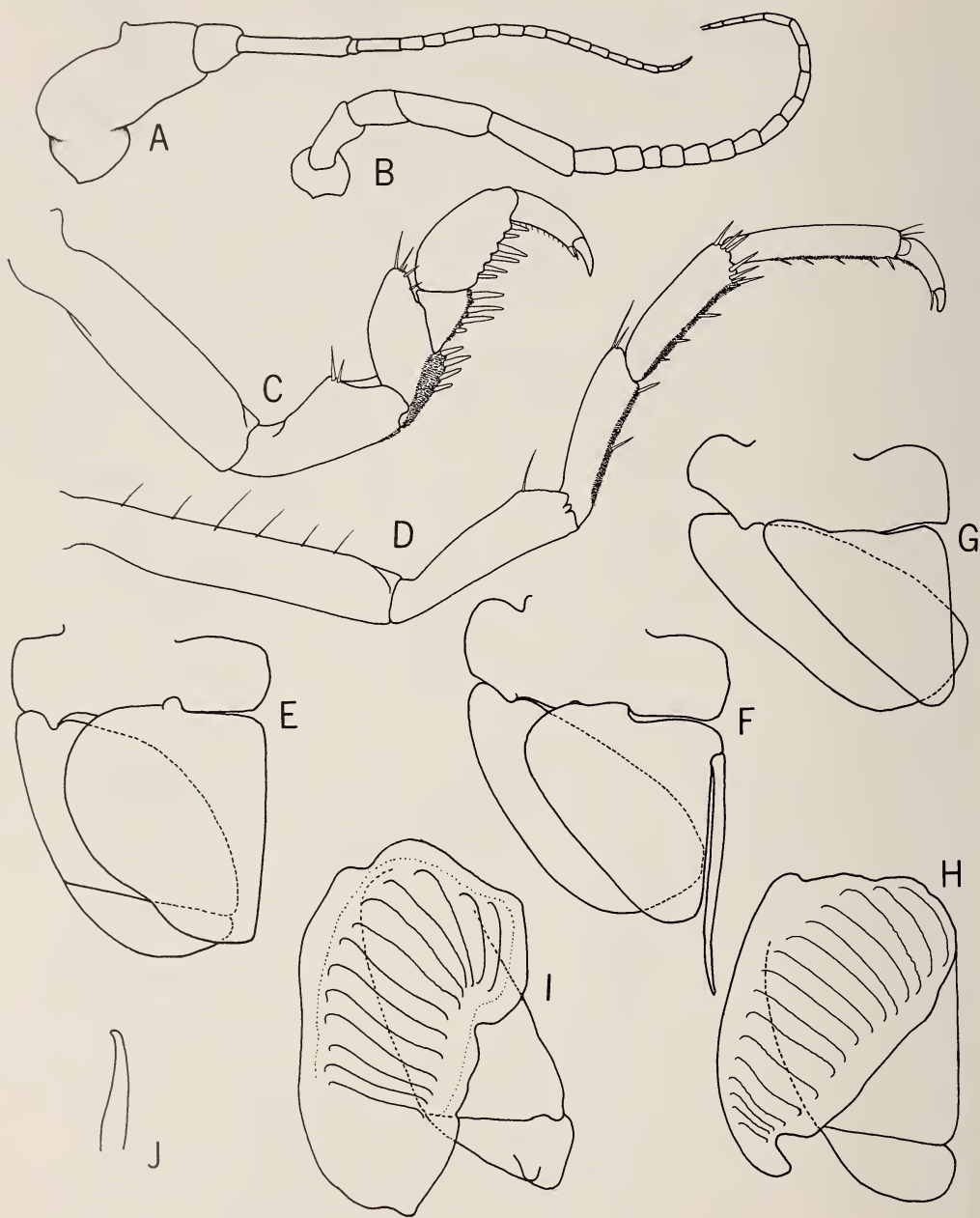


Fig. 30. *Paracilicaea cordylina* sp. nov. A. Antennule. B. Antenna. C. Pereopod 1.
 D. Pereopod 7. E. Pleopod 3. F. Pleopod 2. G. Pleopod 1. H. Pleopod 4.
 I. Pleopod 5. J. Penial lobe.

four elongate spines. Maxilla 1, inner ramus bearing four strong serrate distal spines; outer ramus with nine stout simple spines. Maxilla 2, inner ramus with about ten elongate serrate spines plus several shorter simple spines mediodistally; inner and outer lobes of outer ramus with six or seven serrate spines each. Maxilliped, endite with single retinaculum on medial margin, outer margin convex, twelve fringed spines on distal margin; palp articles 2-4 with numerous spines on tips of lobes. Pereopod 1, unguis about half length of rest of dactylus; propodus with six spines on posterior margin; carpus triangular, with four spines and fine spinule patch on posterior margin; merus with rounded distodorsal lobe bearing few slender spines, four strong spines and broad spinule patch on posterior margin. Pereopod 7, propodus narrow-cylindrical, with five slender spines and narrow band of spinules on posterior margin; carpus narrow, cylindrical, with several spines distally, four spines and broad spinule band on posterior margin; merus with two spines and broad spinule patch on posterior margin. Penial processes on sternum of pereonite 7 slender elongate, distally faintly hooked. Pleopod 1, endopod triangular, exopod elongate-oval; pleopod 2 with slender copulatory stylet articulating basally on triangular endopod, reaching well beyond apex of rami, exopod elongate-oval; pleopod 3, endopod with outer margin becoming strongly convex; exopod elongate-oval with narrow distal article; pleopods 4 and 5, exopod biarticulate, thin membranous; endopod pleated. Uropod with short distally rounded inner ramus fused with basis, outer ramus elongate-cylindrical, tapering distally to narrowly rounded apex.

Remarks

The present species of *Paracilicæa* differs from the three intertidal species described from Mozambique in several features, but is most easily distinguished by pleonal structure.

Paracilicæa teretron Barnard, 1955, has only two submedian dorsal tubercles on the pleotelson, while the three lobes of the pleotelsonic apex, and the uropodal endopod, are more elongate than in *P. cordylina*. The former species also lacks tubercles on the posterior pereonites.

Paracilicæa mossambicus Barnard, 1914, with trilobed apices of the telsonic lobes and uropodal rami, is quite distinctive.

Paracilicæa clavus Barnard, 1955, has two very strong, rather than four smaller, submedian pleotelsonic tubercles and more elongate lobes of the pleotelsonic apex.

Paracilicæa hanseni Stebbing, 1910, from Zanzibar, possesses more pereonal tubercles, a very strong submedian pair of pleonal tubercles, curved uropodal exopods, and more elongate pleotelsonic apical lobes.

Of the four species of *Paracilicæa* recorded by Hale (1929) from South Australia, *P. hamata* possesses a distally hooked uropodal exopod; *P. septemdentata* has a strongly dentate uropodal exopod; *P. pubescens* has a granulate and densely pubescent body; and *P. gigas* is also pubescent, with a narrow notched pleotelsonic apex.

Etymology

The specific name, from the Greek *kordylinos*, meaning club-like, refers to the shape of the uropodal ramus.

INFRAORDER ASELLOTA

Family *Stenetriidae**Stenetrium* Haswell, 1881*Stenetrium perestrelloi* sp. nov.

Figs 31–32

Material

East London area. Holotype SAM–A17839, SM 163/4, 33°04'S 28°06'E, 90 m, 1 ♂, TL 6,5 mm. Paratypes SAM–A17840, SM 163/4, 90 m, 1 ovig. ♀, TL 5,1 mm, 1 ♀, TL 5,9 mm, 15 juvs. USNM 189077, SM 163/4, 90 m, 1 ♂, TL 6,0 mm, 3 juvs.

*Description**Male*

Body three and one-half times longer than wide, widest at pereonite 7. Integument with diffuse brown pigmentation, strongest around eye, localized lateral dark patches on pereonites, diffuse lateral band on pleon. Anterior half of body with scattered elongate setae. Head with lateral margins entire; anterolateral angle acute; rostrum roughly pentagonal, widest at base, apically narrowly rounded, distal margin with hyaline teeth (easily broken off). Eyes reniform, strongly pigmented. Pleon slightly wider than long; lateral margins entire; posterior margin between uropod bases evenly rounded.

Antennule with flagellum of thirteen articles, eleven distal articles each bearing single aesthetasc. Basal antennal article with tooth-like lobe at outer distal angle. Mandibular palp, article 2 bearing two strong serrate spines and distal row of ten short spines; distal article widest at midlength, with distal narrowed part, both regions bearing spines. Maxilla 1, inner ramus with one narrow and two stout serrate spines; outer ramus with ten toothed spines. Maxilla 2, inner ramus with thirteen to fifteen fringed spines on mediodistal margin; both lobes of outer ramus bearing four elongate fringed spines. Maxilliped with six retinaculæ and distal row of fringed spines on medial margin; article 3 with broadly rounded mediodistal lobe. Pereopod 1 dactylus overlapping propodal palm by about one-fourth of its length; propodus broad, palm armed with strong triangular outer and large inner tooth, with three small teeth between them; small triangular tooth close to dactylar articulation on medial surface; dactylus, anterior and posterior margins of propodus, and posterior margins of carpus and merus with dense setae; merus and ischium with triangular lobe on anterodistal angle. Posterior pereopods with strongly biunguiculate dactyli, with narrower proximal spine; propodi and carpi elongate-rectangular, with sensory spines on posterior

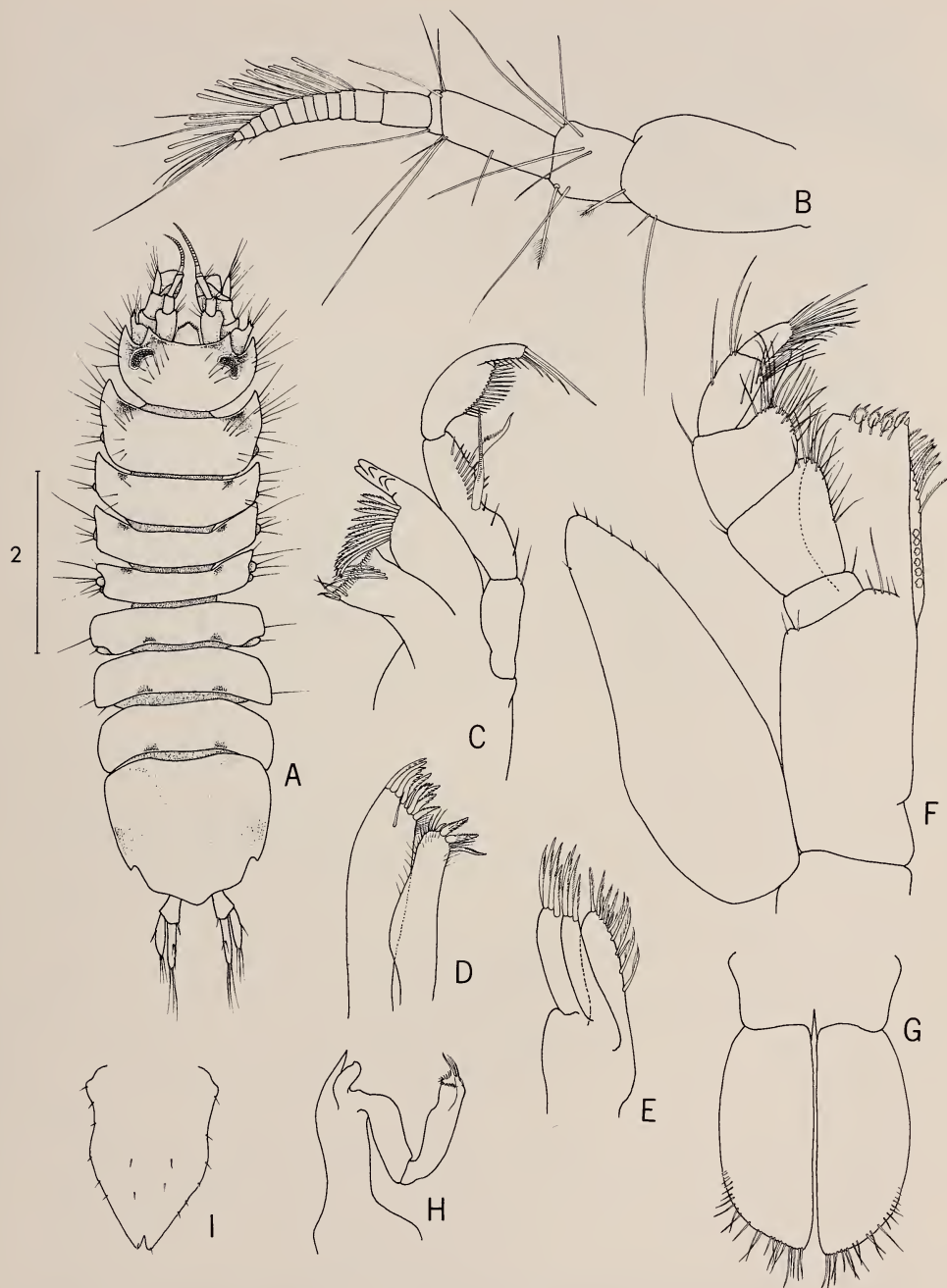


Fig. 31. *Stenetrium perestrelloi* sp. nov. A. Male, dorsal view. B. Antennule. C. Mandible. D. Maxilla 1. E. Maxilla 2. F. Maxilliped. G. Pleopod 1 male. H. Pleopod 2 male. I. Operculum, female. Scale 2 mm.



Fig. 32. *Stenetrium perestrelloi* sp. nov. A. Pereopod 1, male. B. Pereopod 1, female.
C. Pereopod 7.

margins; meri with strong elongate spine on anterodistal angle. Pleopod 1, rami with outer distal margins evenly rounded, bearing row of short setae, inner apices subacute. Uropods with inner ramus slightly longer and narrower than outer, both rami tipped with elongate setae.

Female

Pereopod 1, dactylus with row of short serrate spines on cutting edge; propodus with strong posterodistal serrate spine, palm with eleven slender fringed spines. Operculum with short apical notch.

Remarks

Of the eight southern African species of *Stenetrium* having well-pigmented reniform eyes, *S. perestrelloi* most closely resembles *S. esquamatum* Schultz, 1982a, known from False Bay to the East London area. Schultz's species has a very similar rostrum and palmar armature on pereopod 1 ♂, but a more elongate propodus, serrate lateral margins of the pleon, pleopod 1 ♂ is distally truncate-rounded, the antennular flagellum has more articles, while the inner lobe of maxillipedal palp article 3 is not as broadly rounded.

Stenetrium crassimanus Barnard, 1914, is similar to the present species in the broadly setose pereopod 1 of the male, but has three equally strong palmar teeth (see Kensley 1978e, fig. 65F), and a triangular rostrum, unlike *S. perestrelloi* which has large and small palmar teeth and a roughly pentagonal rostrum.

Etymology

The species is named after Manoel de Mesquita Perestrello, a sixteenth-century Portuguese explorer who mapped the east coast of South Africa. (K. H. Barnard previously named four species of *Stenetrium* after Portuguese explorers.)

Family Janiridae

Ianisera Kensley, 1976

Ianisera expansa sp. nov.

Figs 33–34

Material

Holotype SAM-A17841, SM 129, 30°53'S 30°31'E, 850 m, 1 ♂, TL 3,2 mm; allotype, 1 ovig. ♀, TL 3,1 mm. Paratypes SAM-A17842, SM 123, 30°33'S 30°48'E, 690 m, 2 ♂, 2 ♀. Paratypes SAM-A17843, SM 103, 28°31'S 32°34'E, 680 m, 4 ♀. Paratypes SAM-A17844, SM 86, 27°59'S 32°40'E, 550 m, 1 ovig. ♀, 2 ♀. Paratypes SAM-A17845, SM 129, 850 m, 3 ♂, 3 ovig. ♀, 3 ♀. Paratypes SAM-A17846, SM 185, 33°39'S 27°11'E, 90 m, 1 ♀, 3 juvs. Paratypes USNM 189079, SM 226, 32°28'S 28°58'E, 710–775 m, 3 ♂, 1 ovig. ♀, 2 ♀.

*Description**Male*

Body strongly dorsoventrally flattened, parallel-sided, three times longer than wide, widest at pereonite 6. Head with poorly pigmented dorsolateral eyespots, lacking ommatidia; frontal margin medially very gently convex; lateral margins convex, finely serrate. Pereonites with lateral margins faintly serrate, serrations becoming obsolete posteriorly in adult specimens; pereonites 2 and 3 laterally bilobed. Pleon of single segment, wider than long, lateral margins finely serrate, posterior margin evenly rounded between uropodal bases. Antennule reaching to base of antennal peduncle article 5, with broad flattened basal article, five distal articles; single aesthetasc on terminal and subterminal article. Antenna (broken in most specimens) with three proximal peduncle articles together shorter than article 4; article 2 with short accessory scale; article 5 one and two-thirds length of article 4; flagellum longer than peduncle, of about thirty articles. Mandibular palp with basal article longer than article 2, latter with three strong serrate spines in distal half; article 3 strongly curved, with seven proximal simple spines and row of distal spines increasing in length to longest terminal spine; incisor of four indurate cusps; lacinia mobilis stout, bearing four or five serrations; four fringed spines in spine row; molar stout, with distally truncate grinding surface. Maxilla 1, inner ramus with two fringed setae and several finer setules; outer ramus with eight serrate spines. Maxilla 2, inner ramus one and one-half times wider than lobes of outer ramus, bearing several simple and fringed setae on mediodistal margin; lobes of outer ramus each bearing three elongate fringed setae. Maxilliped with articles 2 and 3 of palp expanded; endite with several fringed and simple spines distally, short single spine at mediodistal angle, two coupling hooks on medial margin. Pereopods all biunguiculate; pereopod 1 shorter than following legs; few short sensory spines on posterior margins of propodi and carpi. Pleopod 1 basally broad, rami fused for three-fourths of length, distally with semicircular marginally setose median area, and triangular spinose lateral lobe. Pleopod 2, inner ramus distally greatly produced into fine whip-like structure; outer ramus with setose shoulder in distal half of lateral margin. Pleopod 3, inner ramus with three stout plumose setae; outer ramus of two articles, both setose on outer margins. Uropod with stout basis, inner ramus slightly wider and almost one-fourth longer than outer, both rami tipped with fine setae.

Ovigerous female

Overall proportions and appendages as in male. Operculum subcircular, with marginal fringe of setae on distal third.

Remarks

Given the uncertain status of many of the nominal janirid genera, placing of the present species must be tentative. The general body form and the appendages suggest an affinity with the *Janira-Neojaera-Ianiropsis-Janilirata* group

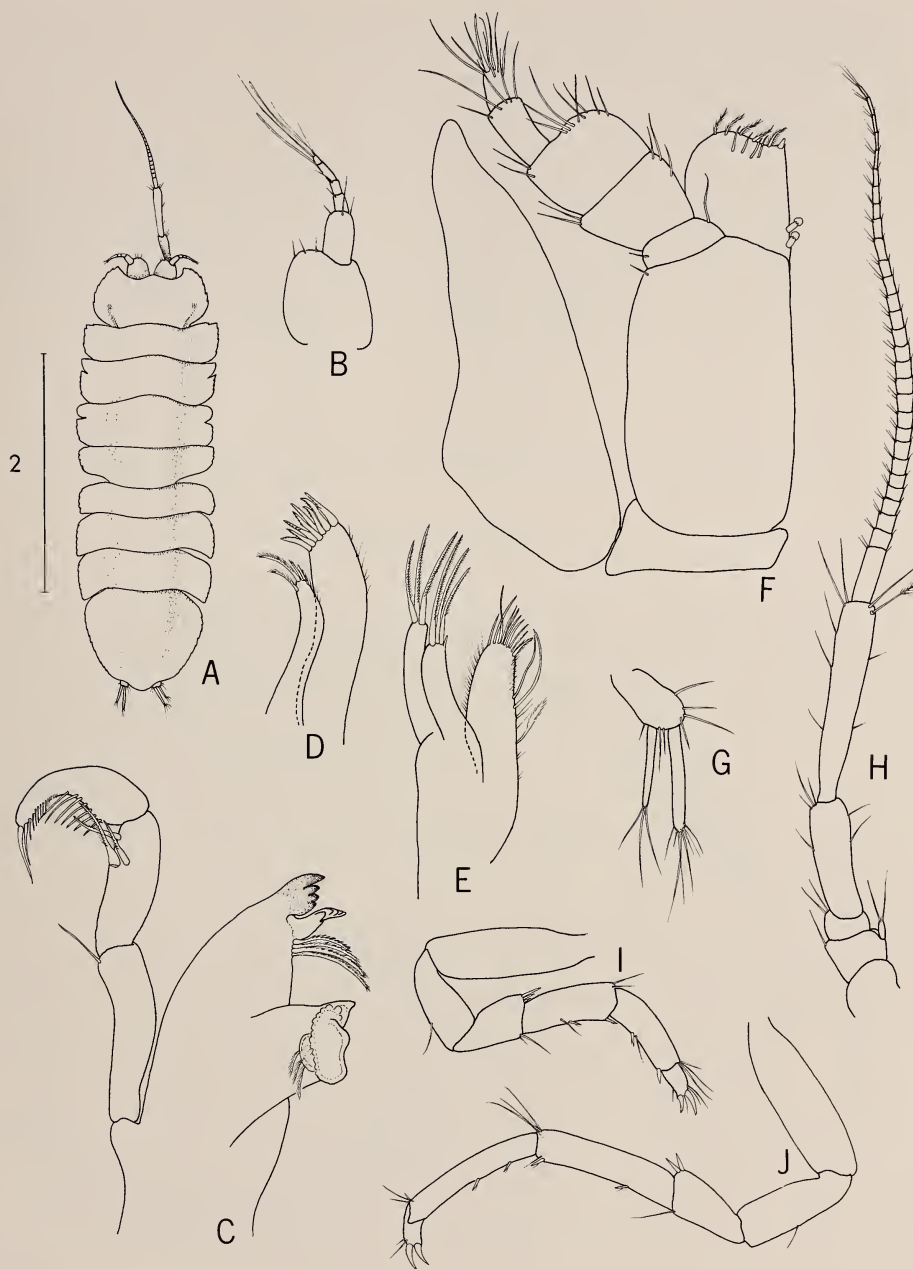


Fig. 33. *Ianisera expansa* sp. nov. A. Male, dorsal view. B. Antennule. C. Mandible. D. Maxilla 1. E. Maxilla 2. F. Maxilliped. G. Uropod. H. Antenna. I. Pereopod 1. J. Pereopod 7. Scale = 2 mm.

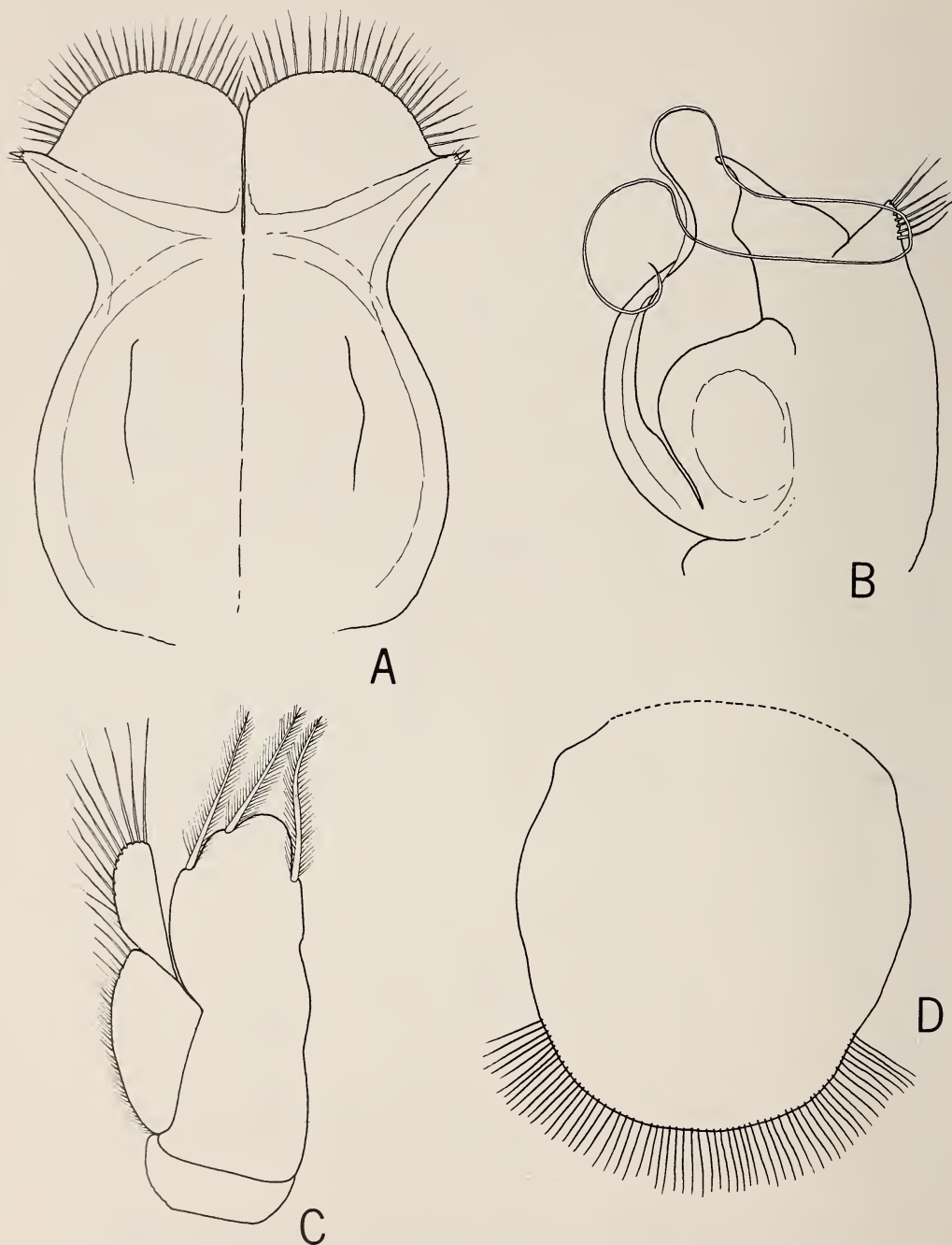


Fig. 34. *Ianisera expansa* sp. nov. A. Pleopod 1, male. B. Pleopod 2 male. C. Pleopod 3 male. D. Operculum, female.

of genera. The biunguiculate pereopods, minute eyes, very short uropods, elongate antennae, lack of rostrum, and the whip-like extension of the inner ramus of pleopod 2 in the male most closely resemble the situation in *Neojaera* (see Menzies 1962b: 74). The remarkable distal expansion of pleopod 1 in the male, however, is very similar to *Ianisera trepidus* Kensley, 1976, from Amsterdam Island, southern Indian Ocean, and, mainly for this reason, the new species is placed in this genus. *Ianisera expansa* differs from *I. trepidus* in having a less setose integument, more slender uropodal rami, a more elongate antenna, finely serrulate lateral margins of the head and pereonites, and shorter spiniform lateral lobes of the male pleopod 1. It is possible that *Ianisera* will be found to be synonymous with *Neojaera*, when the much-needed revision of the family is produced.

Etymology

The specific name refers to the expanded distal lobes of the male pleopod 1.

Natalianira gen. nov.

Diagnosis

Head not fused with pereonite 1; eyes lacking. Antennule longer and broader than antenna. Mandibular palp three-articulate; molar spiciform, slender; spine row reduced. Maxillipedal palp five-articulate. Pereopod 1 pseudo-chelate. Pereopods 2–7 uni-unguiculate. Pleon consisting of single segment. Uropod uniramous, of one (?two) articles.

Type species

Natalianira spinosa sp. nov., by original designation.

Remarks

Of the approximately 40 genera of the Janiridae, only *Janirella* and *Katianira* possess uniramous uropods. The former, however, unlike *Natalianira*, always has a distinctly biarticulate uropod, a prehensile subchelate pereopod 1, antennae (bearing an accessory scale) longer than the antennules, and a stout distally truncate molar and well-developed spine row on the mandible.

Katianira Hansen, 1916, resembles *Natalianira* in the slender tapering mandibular molar, reduced spine row, and in the 'chelate' pereopod 1. Several differences, however, are apparent. The maxillipedal palp is four-articulate, five in *Natalianira*; the two pairs of antennae are subequal in *Katianira*, while the spine row of the latter consists of two elongate spines. In *Natalianira* the spine row consists of two very short spines in the left, and two flattened structures in the right.

The highly modified mandible and uropod of *Natalianira*, which differ from those of most genera of the Janiridae, suggest that this is a far more apomorphic form than most members of the family. The highly spinose nature of the body

margins and appendage margins, and the pseudochelate pereopod 1 may be an adaptation for life in a rubble or organic detritus-rich habitat. In all specimens, the body outline was obscured by debris entangled in the marginal spines.

Etymology

The generic name is a combination of 'Natal', along the continental shelf of which province the animals were collected, and '*Janira*', the type genus of the family. Gender: feminine.

Natalianira spinosa sp. nov.

Figs 35–36

Material

Zululand to southern Natal area. Holotype SAM–A17865, SM 123, 30°33'S 30°48'E, 690 m, 1 ♂, TL 2,5 mm. Paratypes SAM–A17866, SM 129, 30°53'S 30°31'E, 850 m, 1 ovig. ♀, TL 3,0 mm, 1 ♂, TL 2,5 mm. Paratype USNM 189082, SM 86, 27°59'S 32°40'E, 550 m, 1 ♂, TL 2,5 mm. Paratype USNM 189083, SM 103, 28°31' 32°34'E, 680 m, 1 ♂, TL 2,1 mm.

Description

Male

Body elongate-oval. Head slightly more than three times wider than long; frontal margin straight, armed with row of spines; eyes lacking, but unpigmented rounded lobe present lateral to antennular base; broader spinose rounded lobe posterolateral to eye rudiment; dorsum with four spinose tubercles. Pereonite 1 with spinose lateral margin consisting of single lobe; pereonites 2–7 each with bilobed spinose lateral margins; all pereonites bearing one middorsal and two lateral rounded spine-bearing tubercles. Pleon consisting of single segment, with rounded lateral lobe in anterior half, posterior margin between uropodal bases tapering to rounded apex; dorsally rounded with large middorsal and smaller lateral spinose tubercles.

Antennule with broad flattened basal article bearing two spines on medial and eight spines on outer margins; flagellum of eight articles, second article four times longer than first, articles 4–7 each with single aesthetasc, terminal article with three aesthetascs. Antenna considerably shorter and narrower than antennule, of five peduncle articles and single flagellar article. Mandible with three-articulate palp, basal article about one-fifth longer than second, distal article shorter than second, with six spines on distal margin; incisor of two or three narrow cusps; bicuspid lacinia mobilis on one side, with two very small spines in spine row, three flattened spines on other side; molar spiciform, with one small distal tooth on one side; bluntly triangular keel-like structure distal to palp insertion. Maxilla 1, inner ramus with three elongate serrate spines and one very short simple spine distally; outer ramus with thirteen simple and serrate spines. Maxilla 2, inner ramus

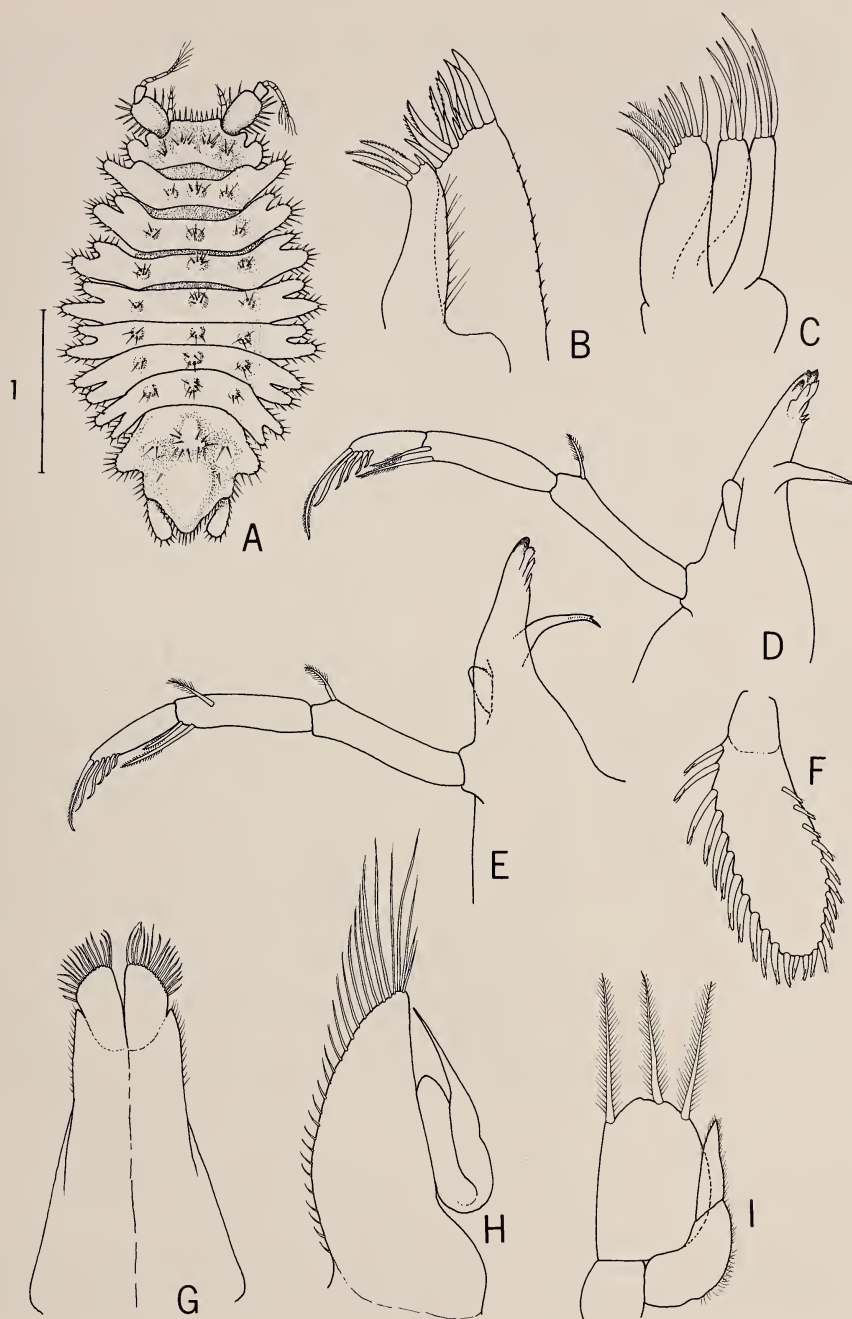


Fig. 35. *Natalianira spinosa* sp. nov. A. Holotype, dorsal view. B. Maxilla 1. C. Maxilla 2. D. Right mandible. E. Left mandible. F. Uropod. G. Pleopod 1 male. H. Pleopod 2 male. I. Pleopod 3 male. Scale = 1 mm.

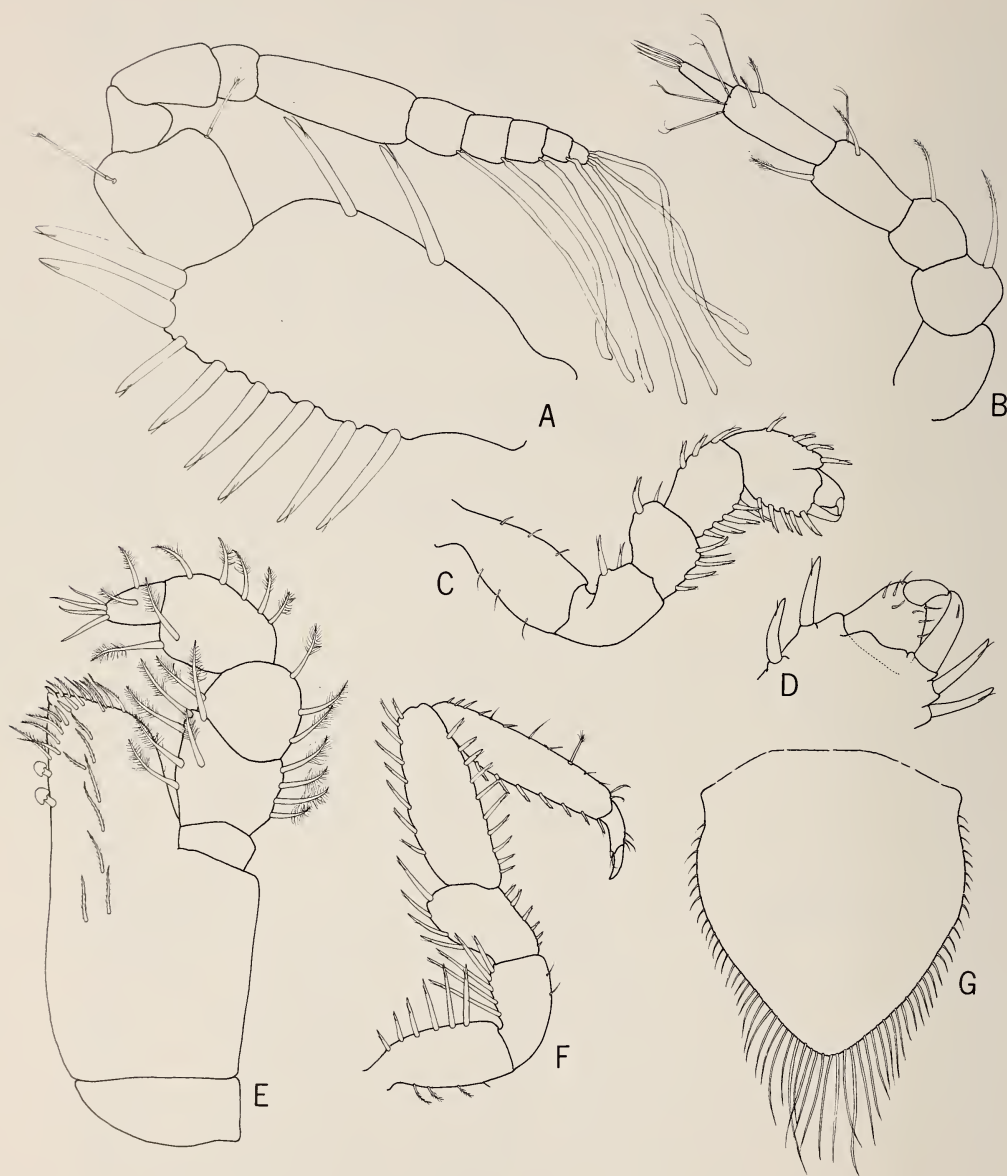


Fig. 36. *Natalianira spinosa* sp. nov. A. Antennule. B. Antenna. C. Pereopod 1. D. Dactylus and propodus, pereopod 1. E. Maxilliped. F. Pereopod 7. G. Operculum, female.

with three elongate fringed spines on mesial margin, six simple spines on distal margin; both lobes of outer ramus each with four elongate spines. Maxillipedal endite with two coupling hooks on mesial margin, short irregular spine at mediodistal angle; several fringed setae on mesial and distal margin, and outer surface; palp of five articles, four distal articles bearing stout fringed spines on both margins, article 4 as broad as two preceding articles; terminal article tipped with four simple setae. Pereopod 1 shorter than following legs; dactylus short, broad, hooked, unguis meeting stout spine at posterodistal angle of propodus; propodus, carpus, merus, and ischium bearing stout sensory spines. Pereopods 2–7 similar, anterior and posterior margins of propodi, carpi, meri, ischia, and anterior margin of basis bearing row of stout sensory spines. Pleopod 1, rami fused for three-fourths length, lobes distally rounded-truncate, margins oblique, bearing several simple setae. Pleopod 2 outer ramus bearing marginal plumose setae, becoming distally longer. Pleopod 3, endopod with three elongate distal plumose setae; exopod narrow, tapering distally, uropod elongate-oval, with feeble indication of line of fusion between basal and distal article; latter bearing twenty-five sensory spines.

Female

Body only slightly wider than in male. Brood-pouch formed by three pairs of oostegites on pereonites 2–4. Pleonal operculum slightly longer than wide, tapering gently in distal half to broadly rounded apex, margin bearing plumose setae, latter becoming distally longer.

Etymology

The specific name refers to the very spinose margins of the head, pereon, pleon, and several of the appendages.

Spinianirella Menzies, 1962

Spinianirella walfishensis Menzies, 1962

Fig. 37

Spinianirella walfishensis Menzies, 1962a: 171, fig. 55. Wolff, 1962: 34, 262, 271, 274, 275.

Material

East London to Durban area. SAM-A17847, SM 129, 850 m, 1 ♂, 1 ovig. ♀, 3 ♀, 1 juv. SAM-A17848, SM 162, 630 m, 1 ♀. SAM-A17849, SM 226, 710–775 m, 1 ♂. SAM-A17850, SM 236, 660–670 m, 1 ♂. SAM-A17851, SM 250, 150–200 m, 1 ♀. USNM 189080, SM 129, 850 m, 1 ♂, 3 ♀.

Previous records

South Atlantic, Walvis Basin, 1 816–2 970 m.

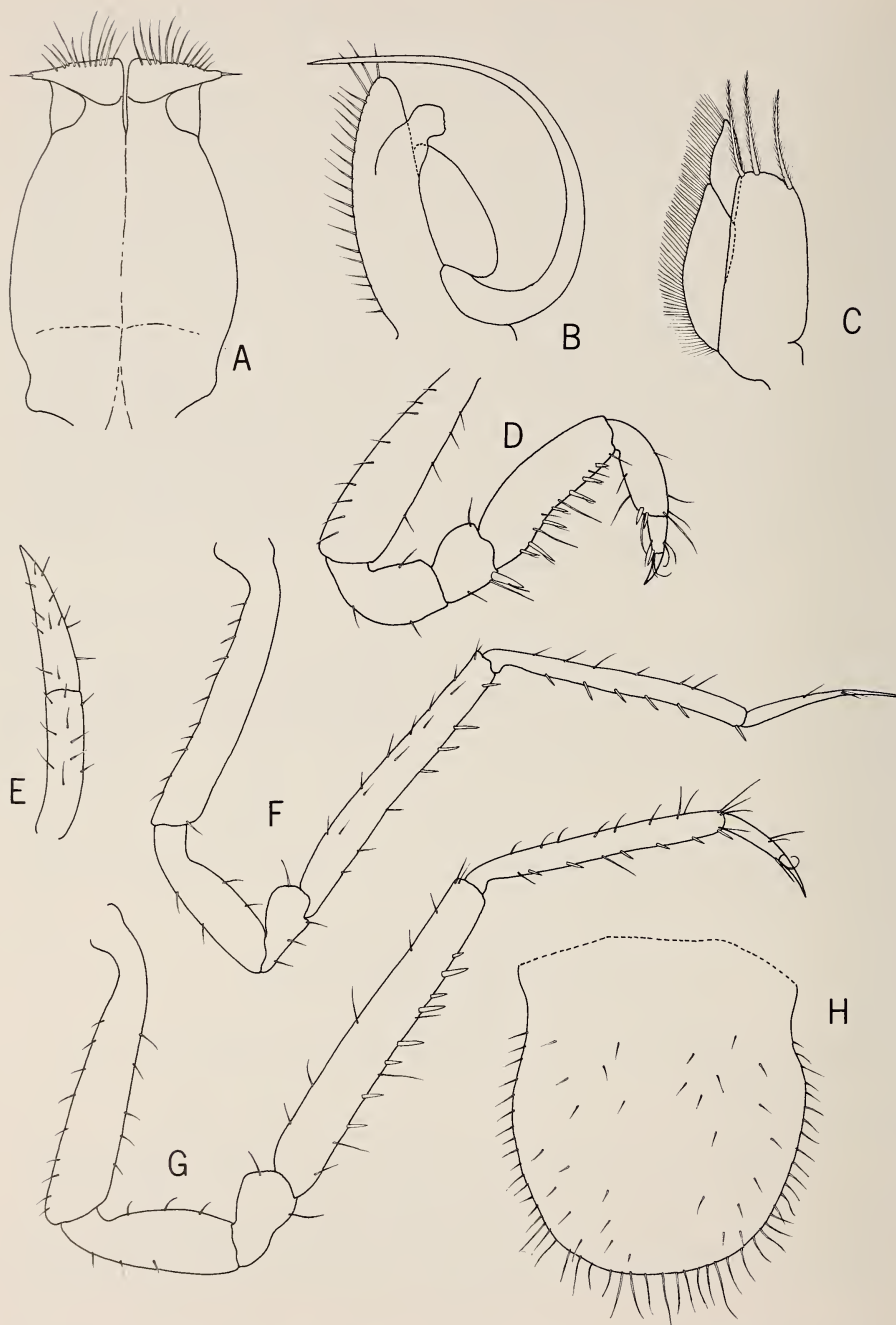


Fig. 37. *Spinianirella walfishensis* Menzies A. Pleopod 1 male. B. Pleopod 2 male. C. Pleopod 3 male. D. Pereopod 1. E. Uropod. F. Pereopod 2. G. Pereopod 7. H. Operculum, female.

Remarks

The present material agrees well with Menzies' description. As this is the first record of the male of this species, figures of the male pleopods 1–3 are provided, as well as additional appendages, to supplement the original description.

Family *Joeropsidae**Joeropsis* Koehler, 1885*Joeropsis integer* sp. nov.

Fig. 38

Material

East London area. Holotype SAM-A17852, SM 163, 33°04'S 28°06'E, 90 m, 1 ovig. ♀, TL 3,5 mm. Paratypes SAM-A17853, SM 163, 90 m, 2 ♀, TL 2,8 mm, 3,9 mm.

*Description**Ovigerous female*

Body almost three times longer than wide. Head with lateral margins entire; frontal plate very gently convex; dorsolateral eyes well developed; broad, roughly pentagonal dorsal pigment patch present. Body widest at pereonite 3. Pleon with lateral margins entire; posterior margin between uropods triangular. Antennule, basal article having rounded distolateral lobe; article 2 about half length and width of article 1; distal article bearing three aesthetascs. Antenna with article 3 having transparent membrane on median margin; flagellum of seven articles. Mandible with three-articulate palp, distal article with eight spines. Maxilla 1, outer ramus with eleven strongly toothed distal spines; inner ramus with three distal setae. Maxilla 2, inner ramus short, with four simple distal spines; two lobes of outer ramus each with three elongate fringed spines and one simple spine. Maxilliped with palp article 2 broadest; article 5 relatively elongate, about twice length of third; endite with few short distal spines; four retinaculae on median margin. Pereopod 1 shorter than following pereopods; dactylus biunguiculate; propodus with four short spines on posterior margin; following pereopods triunguiculate; propodi with seven or eight spines on posterior margins. Operculum broadly oval, longer than wide. Uropodal basis with broadly rounded inner lobe; rami very short, inner longer than outer, both rami bearing elongate setae.

Remarks

All four of the southern African species of *Joeropsis* have either serrate or toothed pleonal margins, unlike the present species, which is entire. *Joeropsis paulensis* (Vanhöffen) from Gough, St. Paul and Amsterdam islands has entire head and pleonal margins but a markedly tapering pleon, and is noticeably

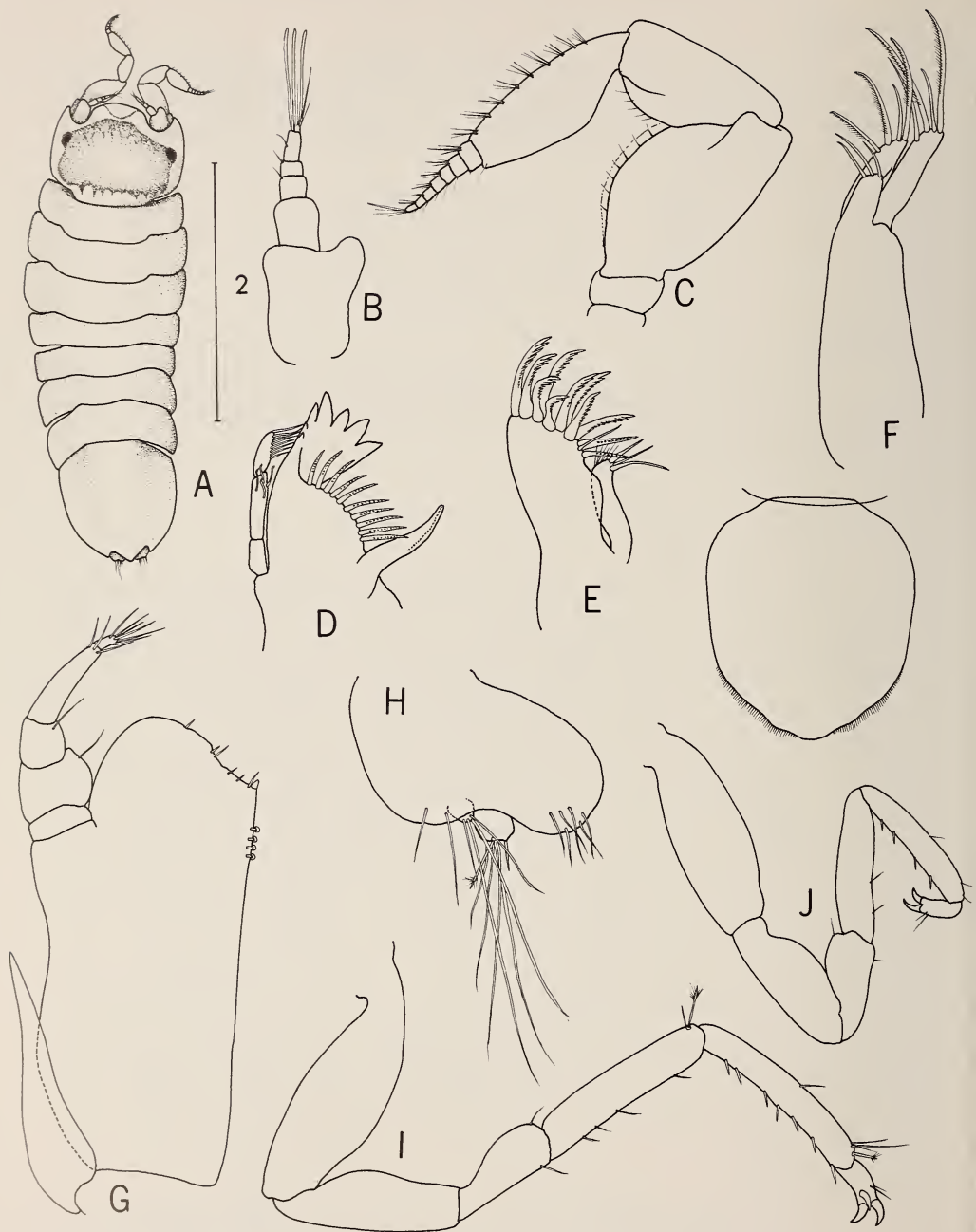


Fig. 38. *Joeropsis integer* sp. nov. A. Holotype, dorsal view. B. Antennule. C. Antenna. D. Mandible. E. Maxilla 1. F. Maxilla 2. G. Maxilliped. H. Uropod. I. Pereopod 7. J. Pereopod 1. Scale = 2 mm.

setose; the frontal plate of the head, while resembling *J. integer*, is more convex, while the maxillipedal palp article 2 is distinctly lobed.

Etymology

The specific name, meaning 'entire', refers to the lateral margins of the head and pleon.

Joeropsis serrulus sp. nov.

Fig. 39

Material

East London area. Holotype SAM-A17854, SM 185, 33°39'S 27°11'E, 90 m, 1 ovig. ♀, TL 2,3 mm. Paratype SAM-A17855, SM 163, 33°04'S 28°06'E, 90 m, 1 ovig. ♀, TL 2,3 mm. Paratype SAM-A17856, SM 164, 33°04'S 28°06'E, 90 m, 1 ♀, TL 2,1 mm.

Description

Ovigerous female

Body about three times longer than wide, broadest at pereonite 3. Head with well-pigmented dorsolateral eyes; lateral margins finely serrate; frontal plate roughly triangular with apex truncate, supported by prominent 'shoulders'; pigment reticulation over entire dorsum. Pereonites with lateral margins finely serrate; pigment reticulation on pereonites 1-6, becoming obsolete posteriorly. Pleon tapering posteriorly, lateral margin with twelve to thirteen teeth; posterior margin triangular between uropods, apex narrowly rounded. Antennule of six articles, basal article broadest and longest, terminal article with single aesthetasc. Antennal flagellum of seven articles. Mandibular palp, basal article subequal to article 2; terminal article with six distal fringed spines; spine row bearing eight slender spines. Maxilla 1, inner ramus with three distal setae, outer ramus with twelve strongly toothed spines. Maxilla 2, inner ramus shorter than lobes of outer ramus, with four distal setae; inner and outer lobes of outer ramus each with four elongate fringed spines. Maxilliped, palp article 2 mesial margin strongly lobed, article 4 elongate, two and one-half times length of article 3; endite with distal margin stepped in mesial half, evenly rounded in outer half; three retinaculae on mesial margin. Pereopod 1 biunguiculate, shorter than following triunguiculate legs; propodi with two or three sensory spines on posterior margin. Operculum slightly longer than wide, distally somewhat narrowly rounded. Uropod reaching beyond pleotelsonic apex, medial lobe of basis with strong distal hook, inner ramus twice length of outer, both rami bearing elongate setae.

Remarks

In possessing finely serrate lateral margins of the head, pereon, and pleon, *Joeropsis serrulus* bears little resemblance to any of the five species described

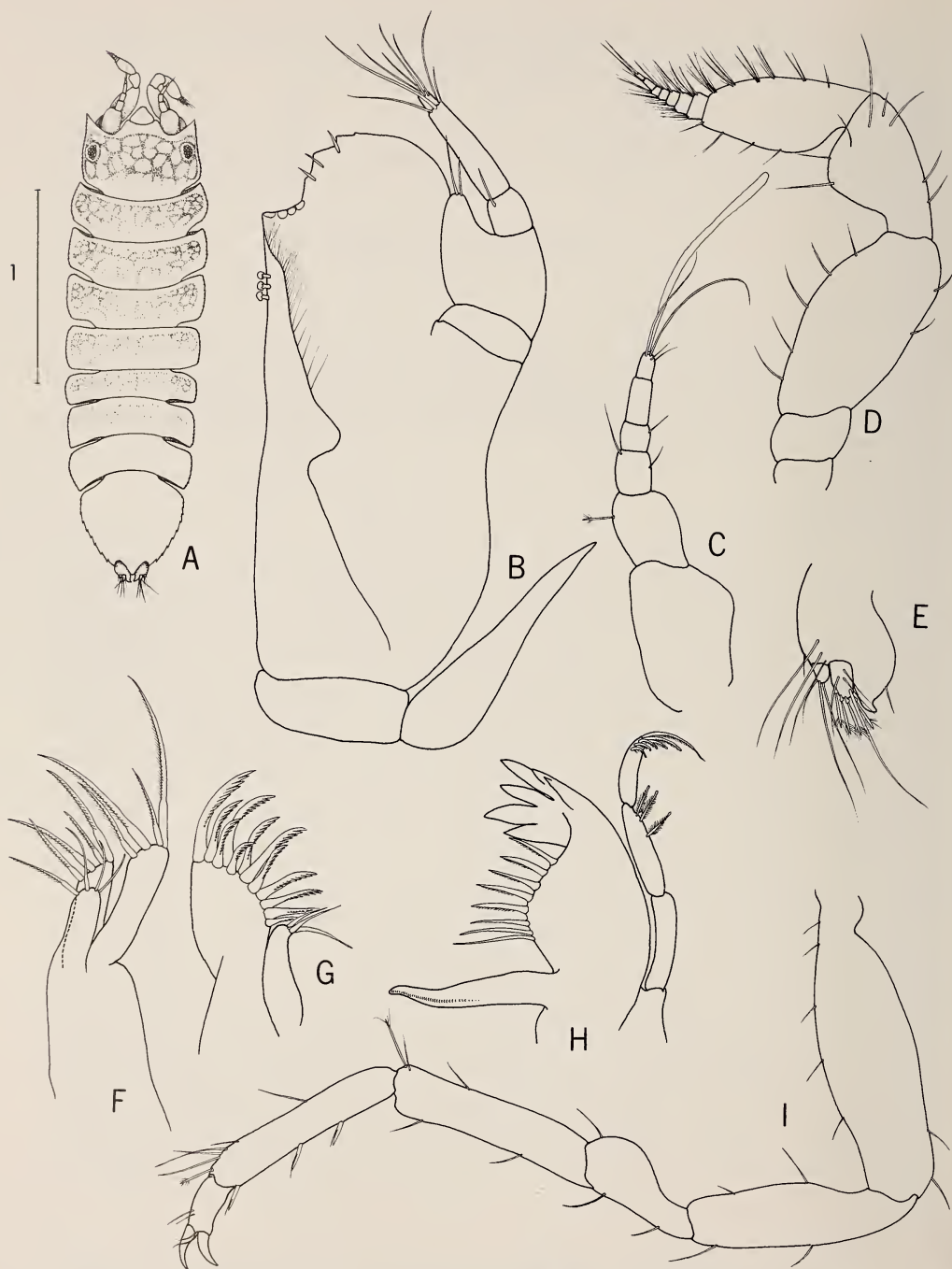


Fig. 39. *Joeropsis serrulus* sp. nov. A. Holotype, dorsal view. B. Maxilliped. C. Antennule. D. Antenna. E. Uropod. F. Maxilla 2. G. Maxilla 1. H. Mandible. I. Pereopod 7. Scale = 1 mm.

from South Africa (see Kensley 1975b). *Joeropsis antarctica* (Menzies & Schultz, 1968) possesses coarsely serrate lateral margins of the head and pleon, but apparently smooth pereonite margins.

Etymology

The specific epithet, from the Latin for a little saw, refers to the fine serrations of the head, pereon, and pleon margins of this species.

Family **Pleurogoniidae**

Notoxenoides Menzies, 1962

Notoxenoides acalama sp. nov.

Fig. 40

Material

Holotype SAM-A17857, SM 117, 30°17'S 31°10'E, 820 m, 1 ovig. ♀, TL 2,0 mm.

Description

Ovigerous female

Integument covered dorsally with very fine circular tubercles. Head with anterior margin evenly convex, lacking ocular peduncles and eyes. Pereonites 1–6 each with elongate lateral spinose process and shorter middorsal spine; pereonites 1 and 2 with cluster of three short spines at base of spinose process; coxae visible in dorsal view in pereonites 5–7; pereonite 7 with short middorsal spine, but lacking lateral spinose process. Pleon consisting of two segments; pleonite 1 very short, unarmed; pleotelson subglobose, with lateral margin armed with thirteen or fourteen transparent spines; posterior margin between uropodal bases broadly triangular, apically rounded.

Basal antennular article armed with five dorsolateral spines and two stronger distal spines; article 2 about half length of article 1; four distal articles together subequal to article 2; terminal article bearing single aesthetasc. Mandibular palp three-articulate, terminal article short, curved, bearing single seta; incisor broad, of five cusps; spine row of four elongate serrate spines; molar stout, distally truncate, with irregular marginal serrations. Maxilla 1, inner ramus with one simple, one broadly serrate, and one finely fringed distal seta; outer ramus with eight distal spines. Maxilla 2, inner ramus with eight distal serrate and fringed spines; inner lobe of outer ramus with four elongate setae, outer lobe with three elongate setae. Maxilliped palp with articles 2 and 3 broad, but not as wide as endite; latter with distal margin straight, bearing five fringed setae and two broad sensory fringed spines; two retinaculæ on medial margin. Pereopod 1 prehensile, shorter than ambulatory legs, dactylus with strong unguis and shorter accessory spine; propodus with two sensory spines on posterior margin; carpus distally expanded, posterior margin with two elongate stout

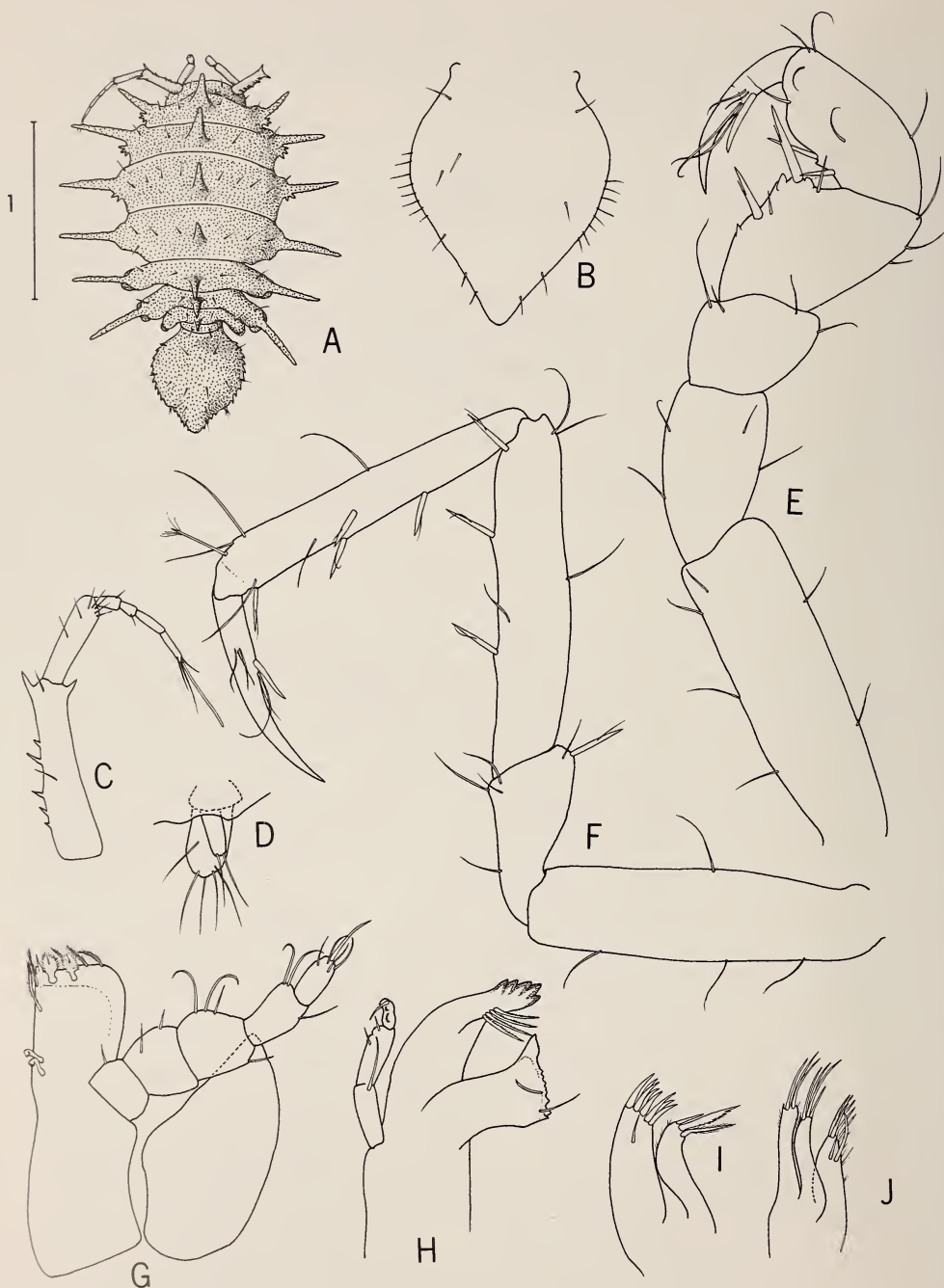


Fig. 40. *Notoxenoides acalama* sp. nov. A. Holotype, dorsal view. B. Operculum, female. C. Antennule. D. Uropod. E. Pereopod 1. F. Pereopod 7. G. Maxilliped. H. Mandible. I. Maxilla 1. J. Maxilla 2. Scale = 1 mm.

sensory spines. Ambulatory pereopods with slender, curved dactylus bearing accessory spine at base of unguis; propodus elongate, with four or five sensory spines on posterior margin; carpus elongate-rectangular, with three sensory spines on posterior margin; merus short, with sensory spine at anterodistal angle. Operculum pyriform, apically narrowly rounded, sparsely setose. Uropodal basis hidden by lateral margin of pleon, outer (dorsal) ramus shorter and one-third width of inner, with two apical setae; inner (ventral) ramus with several distal setae.

Remarks

Three species of *Notoxenoides* Menzies, 1962, have been described: *N. abyssi* Menzies, from the west coast of South Africa, 1 816 m; *N. vemae* Menzies, from 4 047 m on the Walvis Ridge, South Atlantic; and *N. dentata* Menzies & George, 1972, from 3 900 m in the Peru–Chile Trench. *Notoxenoides acalama* differs from all three in the lack of ocular peduncles, the lack of lateral spinose processes on pereonite 7, and the lack of a middorsal spine on the first free pleonite.

At 820 m this is the shallowest record for this rare genus (this being the fourth specimen known).

Etymology

The specific name from the Greek, meaning lacking a stalk, refers to the lack of ocular peduncles.

Family Ischnomesidae

Haplomesus Richardson, 1908

Haplomesus zuluensis sp. nov.

Fig. 41

Material

Zululand. Holotype SAM–A17858, SM 60, 27°09'S 32°58'E, 800–810 m, 1 ovig. ♀, TL 4,9 mm. Paratype SAM–A17859, SM 60, 800–810 m, 1 ovig. ♀, damaged, pleon missing.

Description

Ovigerous female

Body about five and one-half times longer than broad. Integument brittle, very finely granulate. Head with anterior margin slightly concave medially; dorsally gently convex, sunken into pereonite 1. Latter with small lateral tubercle posterior to strong dorsolaterally directed spine. Pereonites 2 and 3 each with two small submedian tubercles and small lateral tubercle. Pereonite 4 half length of pereonite 5, with small middorsal anterior tubercle, and row of four small submedian tubercles. Pereonite 5 with two submedian rows of small tubercles, becoming obsolete in posterior half of segment. Pereonites 6 and 7 fused with

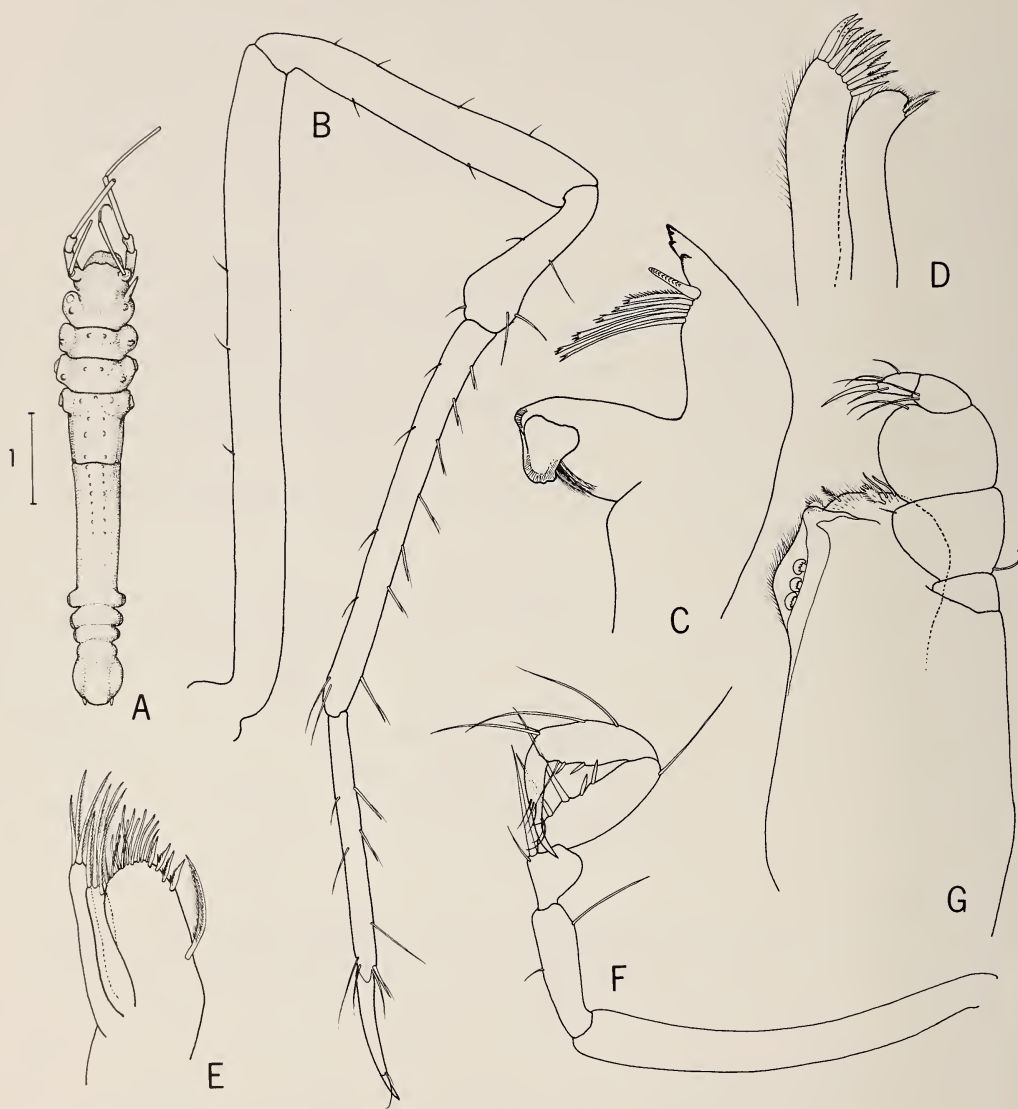


Fig. 41. *Haplomesus zuluensis* sp. nov. A. Holotype, dorsal view. B. Pereopod 7. C. Mandible. D. Maxilla 1. E. Maxilla 2. F. Pereopod 1. G. Maxilliped. Scale = 1 mm.

pleon. Latter oval-rounded, with central evenly convex area, posterior margin rounded.

Article 3 of antennule six times longer than article 4. Mandible lacking palp; molar distally broad, truncate. Maxilla 1, outer ramus with about eleven distal spines; inner ramus distally broadly rounded, with two fringed setae on medial margin. Maxilla 2 inner ramus with large double fringed seta on medial margin, several simple and fringed spines on rounded distal margin; inner lobe of outer ramus with four elongate distal fringed spines; outer lobe with three fringed spines. Maxilliped with articles 2 and 3 of palp broad, expanded, article 3 with medial margin evenly rounded; endite with strong median flange at right angles to endite surface, bearing three retinaculae. Pereopod 1, dactylus (including strong unguis) equal in length to propodus; latter with several elongate setae and two short spines on posterior (inner) margin; carpus slightly longer than propodus, with two short distal, and two elongate proximal sensory spines on posterodistal corner; basis slightly more than three times length of ischium. Pereopods posterior to pereopod 1 elongate slender, with few slender sensory spines on posterior margins of propodi and carpi. Marsupium formed by four pairs of oostegites on pereonites 1–4. Operculum almost circular, evenly convex. Uropod of single article barely extending beyond pleotelsonic apex.

Remarks

Haplomesus zuluensis shows some similarity to *H. quadrispinosus* (Sars), from the North Atlantic, in the integumental granulation and overall ornamentation, but the lateral spines of pereonite 1 are far more elongate in Sars's species. Using Wolff's key (1962) the present species runs down to *H. robustus* Birstein, but this North Pacific species is squatter and more granulate.

Etymology

The specific name is derived from the coastline adjacent to the area in which the species was collected, i.e. Zululand.

Ischnomesus Richardson, 1908

Ischnomesus glabra sp. nov.

Fig. 42

Material

Transkei. Holotype SAM-A17860, SM 247, 31°55'S 29°38'E, 1 800–1 950 m, 1 ♀, TL 4.0 mm.

Description

Female

Integument brittle, smooth, lacking ornament. Head with anterior margin convex, sunken into pereonite 1. Latter broadest part of body, anterolateral corners rounded. Pereonites 2–3 similar, broader than long. Pereonite 4 as wide as

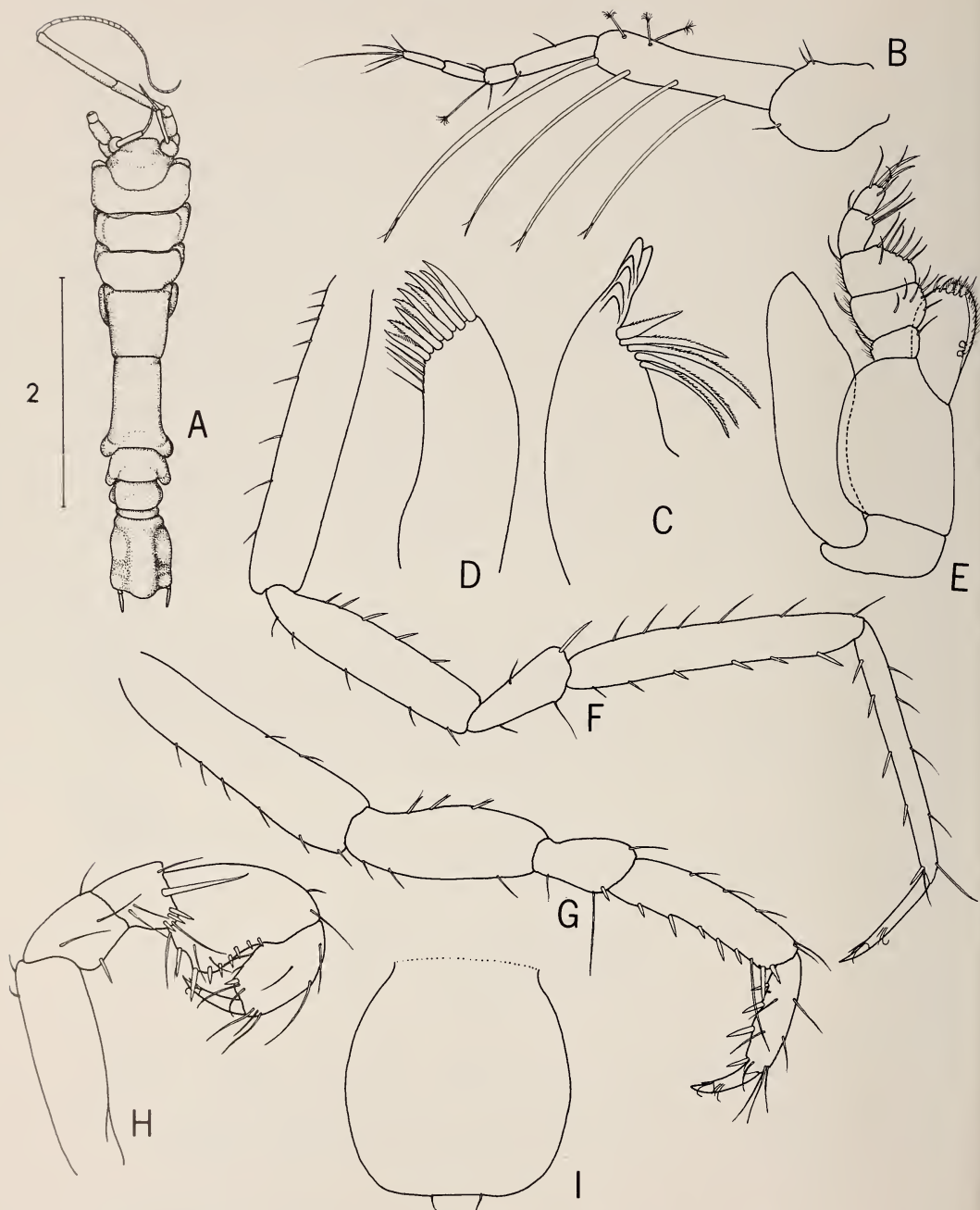


Fig. 42. *Ischnomesus glabra* sp. nov. A. Holotype, dorsal view. B. Antennule. C. Mandible. D. Maxilla 1. E. Maxilliped. F. Pereopod 7. G. Pereopod 2. H. Pereopod 1. I. Operculum, female. Scale = 2 mm.

long. Pereonite 5 longer than wide, about one and one-half times longer than pereonite 4. Pereonite 7 slightly shorter than pereonite 6. Pleon consisting of one very short free pleonite plus pleotelson; latter longer than wide, posterior margin between uropodal bases broadly convex.

Antennule with article 2 subequal in length to article 3 plus flagellum, bearing four elongate ventral sensory spines; flagellum of three articles. Antenna with two distal peduncle articles slender-elongate, article 5 about one-third longer than 4; flagellum of about thirty articles. Mandible lacking palp. Maxilla 1, outer ramus with nine distal spines. Endite of maxilliped not as wide as palp article 2, with two retinaculae on medial margin. Pereopod 1 considerably shorter than pereopod 2; dactylus claw-like, gently curved; propodus with distal truncate margin bearing single short spine; carpus distally widened, sinuous, armed with six short spines, posterior margin with two longer spines. Pereopod 2 slender, propodus and carpus bearing spines on posterior margins. Pereopods becoming more slender posteriorly, pereopod 7 with narrow dactylus, propodus and carpus; two latter articles with few short spines on posterior margins. Operculum broadly subcircular, distal margin slightly flattened. Uropod with basal article mostly concealed by dorsal pleonal margin, only slightly shorter than distal tapering article.

Remarks

Using Wolff's key to the species of *Ischnomesus*, *I. glabra* most closely resembles *I. anacanthus* Wolff, but the Tasman Sea species differs in having a relatively more elongate second antennular article, fewer distal spines on the outer ramus of maxilla 1, and the proportions of the maxillipedal palp are different. From Menzies' (1962a) key, the present species most closely resembles *I. simplissimus* from the South Atlantic, but this species possesses a mandibular palp, has a relatively longer second article in the antennule, and a pleon posteriorly subacute, rather than broadly convex. *Ischnomesus paucispinis* Menzies, from the South Atlantic, bears some resemblance to *I. glabra*, but has a relatively broader pleon bearing one stout and three small setae on the lateral border. *Ischnomesus vinogradovi* Birstein, 1963, from the north-western Pacific, lacks the broad spinose carpus of pereopod 1, and has a more narrowly rounded pleon.

Etymology

The specific name refers to the smooth, unornamented integument of this species.

Stylomesus Wolff, 1956

Stylomesus natalensis sp. nov.

Fig. 43

Material

Natal, south of Durban. Holotype SAM-A17861, SM 129, 30°53'S 30°31'E, 850 m, 1 ♂, TL 4,0 mm. Paratypes SAM-A17862, SM 117, 30°17'S 31°10'E,